The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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Kloman's Improved Process and Machinery for the Manufacture of Solid Eye-Bars.

In the construction of iron and steel bridges, the eye-bar plays so important a part that its manufacture has of late years become the object of much attention on the part of engineers and bridge builders. The very decided preference for the exclusive use of steel in bridges and large structures which has recently manifested itself in this country, has made this subject one of double importance, and presented the seemingly insurmountable difficulty of making a perfectly reliable steel eye-bar, it being admitted on all hands that the solution of this problem would open the door to the general employment of steel in such structures, to the absolute exclusion of iron. Prior to the invention of the patented process of Mr. Andrew Kloman, of which we shall presently speak, there were three well-known modes of manufacturing eye-bars in common use, viz.: 1. Upsetting the ends of the bars into heads. 2. Welding the heads on to the main stem of the bar with scarfed welds. 3. Welding to the ends of the bars plates, so as to increase the thickness of the bar sufficiently to allow it to be afterward spread out into the head required.

That these modes were all very defective and faulty, was proven by numerous practical tests and was universally conceded. The upsetting process distorted and destroyed the fiber of the material, and considerably weakened its tensile strength. As to the two other processes, welds of any kind are objectionable because of their unreliability and want of uniformity, and such bars were additionally defective because, at the point where the weld was made, there was a short bend or kink in the bar, which, under strain, would exhibit a tendency to straighten and break. The welding and upsetting of steel into eye-bars would be still more objectionable, and, in fact, almost impracticable. These imperfections rendered it necessary, in the manufacture of such bars, to put into the heads a disproportionately large amount of material, in order to increase the probabilities for obtaining a reliable bar. Conscious of this condition of things, Mr. Andrew Kloman, of Pittsburgh, conceived and perfected a process which was intended to overcome all these difficulties and produce a faultless eye-bar in both iron and steel.

This invention, which is described in Letters Patent No. 188,741 as an "Improvement in Metal Rolling," is certainly destined to figure prominently in the construction of all bridges to be erected in the future. The object aimed at was to do away with upset or welded bars, and the machinery by which this was to be accomplished is illustrated by the annexed cuts.

In rolling these bars the Universal Mill is employed for many reasons, chief among which are, first, the greater facility for manipulation, and, second, the superior finish of the product.

The arrangement of the rolls (Figs. 1 and 4) will doubtless be familiar to most of our readers. As regards the vertical rolls, they are similar to other universal mills, the peculiarity of the construction lying in the horizontal rolls. The top roll is carried in the usual way, by hangers carried by the screws working in the housings. The bottom roll, by the arrangement shown by dotted lines in Fig. 1, rests upon two toggle joints, *c*, which are interposed between the roll and the lower portion of the housing frame, as shown at c^1 (Fig. 4). These two toggle joints, one under each neck of the bottom roll, are connected by a strong bar P (Fig. 1), which in turn is connected with the piston of a powerful hydraulic ram, H. The hydraulic ram is connected with the housing frame and strongly braced by the bolts H. By forcing water into the end of the hydraulic ram next to the rolls, the forward motion of the piston and connecting rod, P, turns the toggle joints *c*, thus allowing the bottom roll to fall about three-quarters of an inch. The supply valve being now reversed, the water is forced into the other end of the hydraulic ram, the toggle joints straightened up into the position shown in Fig. 1, and the bottom roll raised back to its original position.

The mill is driven by a pair of engines reversing with the ordinary link motion, which in this case is operated by a steam cylinder and piston capable of a rapid motion. The two engine cranks work at right angles on the same shaft, which is geared to a countershaft, the engines making three revolutions to one of countershaft. The mill is then coupled directly to this countershaft. The engines can be stopped suddenly and reversed at once. The mode of operating the mill is the following: A billet of any size, brought into the rolls, is reduced in the ordinary way by backward and forward passes, bringing down the top roll after each pass, by means of the screws which are driven from a countershaft, until the whole billet is reduced to the size of which it is desired to leave the ends of the bar, as at D (Fig. 2). It will be understood that all this time the toggle-joints stand straight in line in the position shown in Fig. 1. The billet being reduced to the size required for the ends, it is again introduced into the rolls and allowed to pass about half way through, when the whole mechanism is stopped. By means of a hydraulic pump and accumulator, not shown in the drawings, the water is forced into the front end of the hydraulic cylinder, the toggle-joints drawn open toward the cylinder and the lower roll allowed to drop about three-quarters of an inch. The top roll is now screwed down as far as it is desired to reduce the bar in the next pass. The water is then forced into the rear end of the hydraulic cylinder, straightening up the toggle-joints and thus forcing up the bottom roll into its original position. It will be seen that now the distance between the horizontal rolls is less to the extent to which the top roll was screwed down, than it was when the mill was stopped. The mill is now started again in either direction and the bar allowed to pass through until it reaches any desired point *d*, (Fig. 2), when the mill is stopped, the engines reversed and started and the bar allowed to pass to the desired point, *d* (Fig. 2), at its other end. At this point the operation above described is again repeated after each pass, until the body of the bar is rolled to the size required, and a blank, as shown in Fig 2, is produced, in which the middle portion forms the stem of the eye-bar, and the ends are left of a size sufficient to admit of their being spread out into the head required. It should be understood that during this entire operation the vertical rolls are employed for rolling the edges of the bar.

This product can now be finished into an eye-bar in various ways. The ends can be spread by rolling them out crosswise, and then dressing or shearing the head under a hydraulic shear, or the head may be finished under the hammer. Another important feature introduced into this mill and also covered by the patent above mentioned, is of the utmost importance. This consists in boxing out the housings, letting niches into them, or leaving arched openings, by means of which the vertical rolls can be drawn back entirely within the inner face of the housings and still be driven by the miter wheels. Their position when so drawn back is shown by dotted lines in Fig. 1. Heretofore in the universal mill the horizontal rolls were made as long as the greatest width of plate or bar to be passed through, plus the diameter of the two vertical rolls. The horizontal rolls are then too long to stand heavy strains with safety. By boxing out the housings or making them open on their inner adjacent faces next to the vertical rolls, provision is made for setting the vertical rolls back and shortening the horizontal rolls by nearly or quite twice the diameter of each vertical roll, so that the machinery is more compact and the horizontal rolls will withstand a much greater strain. Or to state the same thing in another way, the horizontal rolls may be shortened at each end by an amount equal, or nearly equal, to twice the diameter of each vertical roll, so that the working faces of the vertical rolls along their lines of bite can be brought into line with, or a little inside of, the ends of the horizontal rolls, whereby the entire length of the working faces of the latter may be utilized in rolling the material to be operated on. For rolling steel this improvement is most important, as great strains are often brought on the rolls in such manufacture.

From what has been said above, it will be evident to all familiar with the subject that in this mill an eye-bar in iron or steel can be produced which will be entirely free from the faults found in bars made by welding or upsetting. The fiber of the material in the bars is straight and continuous and its distribution uniform. The eye-bars used in the construction of the steel bridge over the Missouri River at Glasgow, Mo., were all manufactured by Mr. Kloman by this process, and since then they have been adopted in many other bridge structures throughout the country. Of a large number of these bars pulled to a breaking strain in tests made prior to their first adoption, not a single bar broke in the head, and the great bulk of them broke near the middle of the bar. By the use of grooved rolls in this mill, Mr. Kloman has also succeeded in making round, square and octagonal tension bars with enlarged ends on which threads can be cut, still leaving the section as large as, or larger than, the body of the bar. The possibilities of this maching, indeed, are very great, and bars of any shape or length, with enlarged parts of any size at any or various points throughout their length, can be rolled thereon with as much ease as a straight bar can be made.

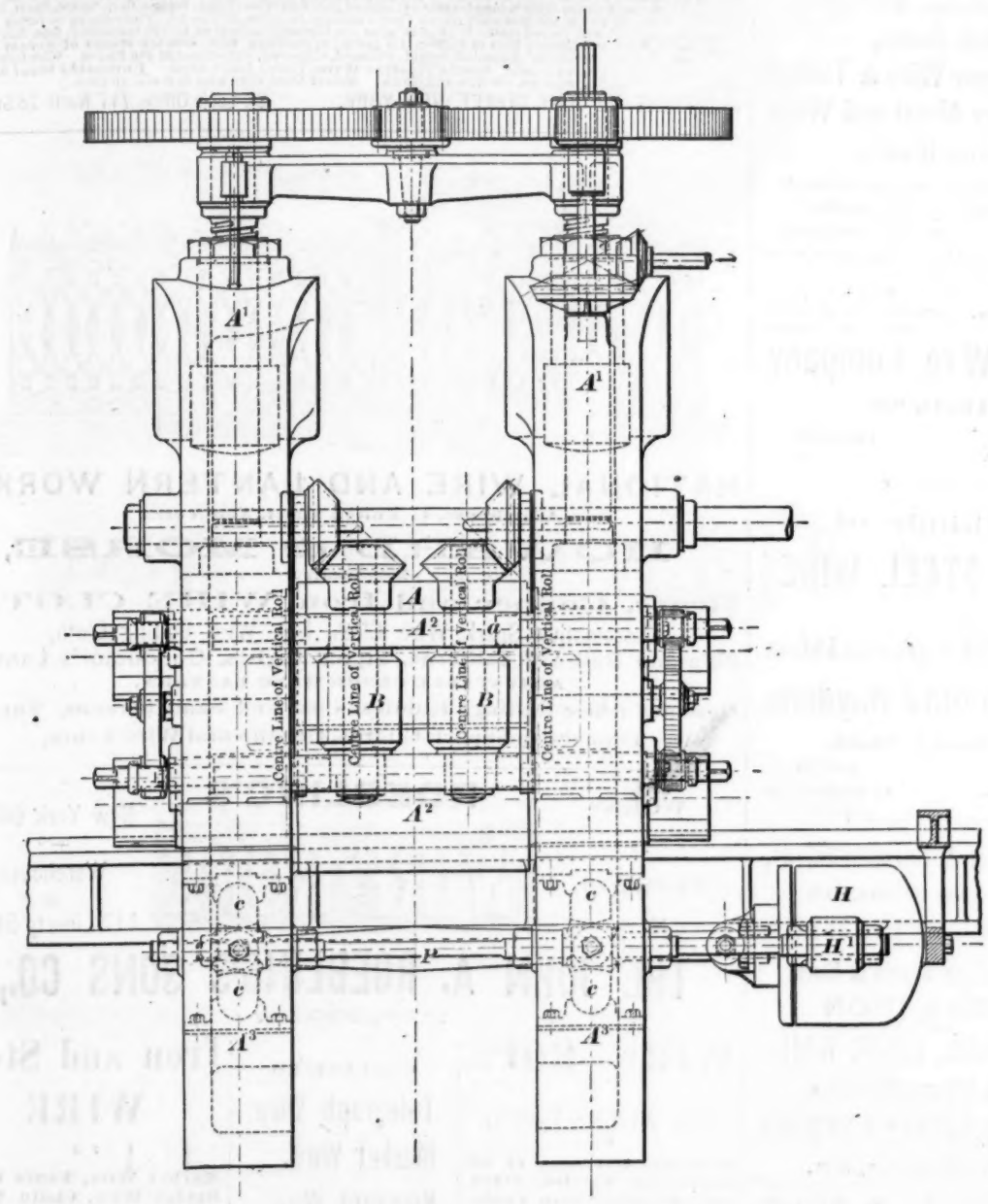

Fig. 1.—Front Elevation.

KLOMAN'S UNIVERSAL MILL FOR ROLLING EYE-BARS.

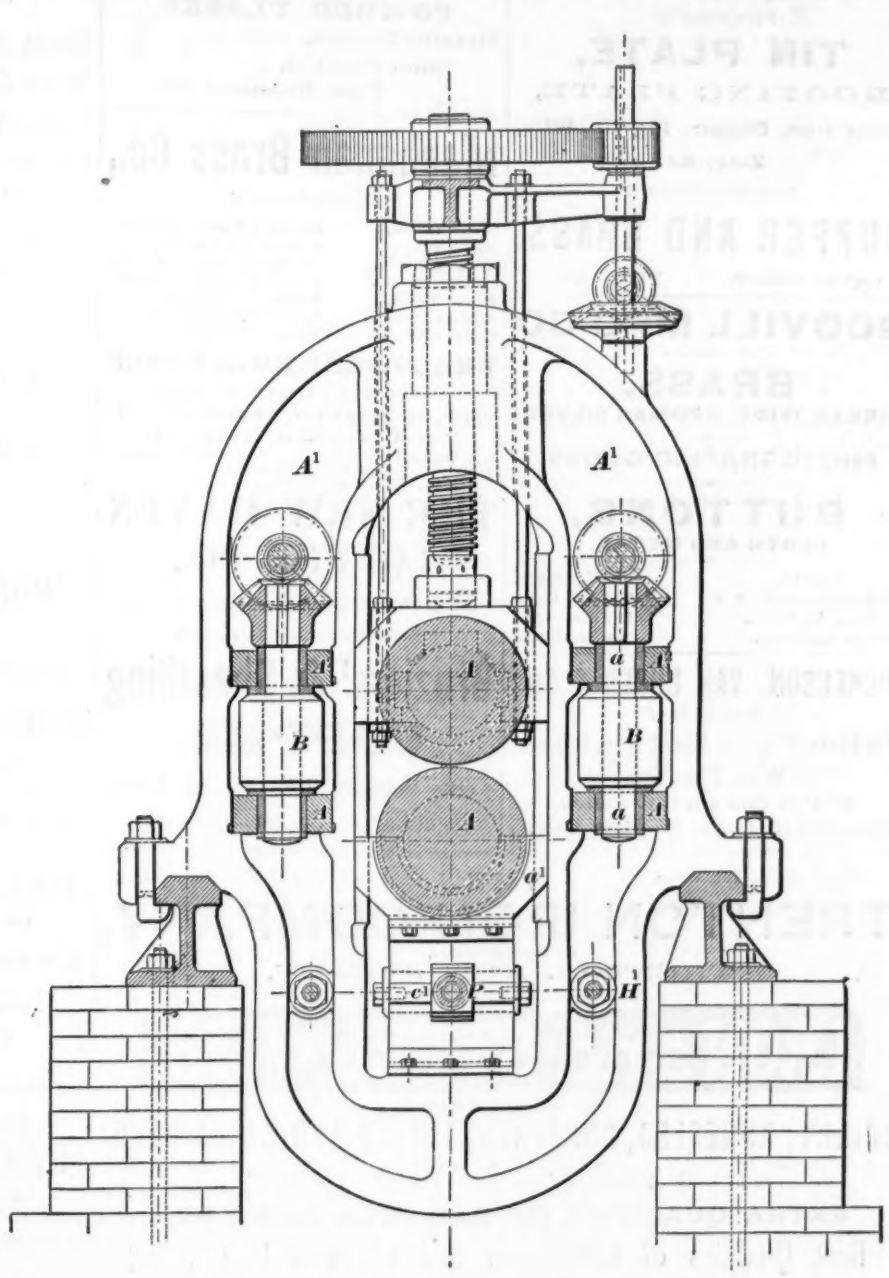

Fig. 4.—Section through Vertical Rolls.

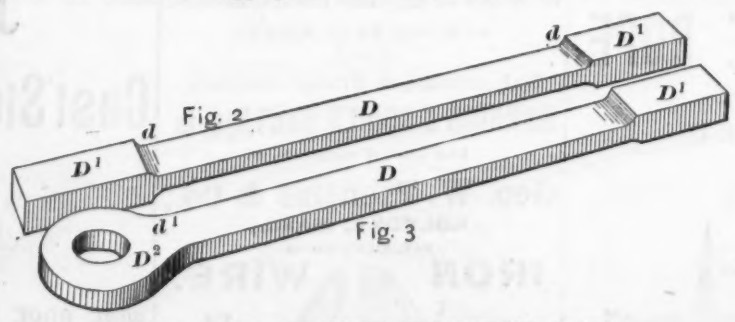

Fig. 2

Fig. 3

EYE-BARS AT DIFFERENT STAGES OF THE ROLLING PROCESS.

Industrial Exhibition at Antwerp.—

The United States Consul at Antwerp informs the Department of State that an Industrial Exhibition will be opened in Antwerp in August, 1879, which will be worthy of universal attention. Space has been allotted for American products. The Consul commends the exhibition to the artisans and producers of the United States. Correspondence may be opened with and consignments sent to S. H. Haine, 39 Rue Honblonnière, Antwerp, Belgium, who will take charge of American goods. He has already received a number of consignments to his care from the United States. Goods should be in Antwerp before the 1st of August next.

The new post office at Antwerp, Belgium, has been fitted up with the well-known Yale lock boxes, which, after two months' trial, are now pronounced by all to be a great improvement. Mr. Weaver, United States Consul at Antwerp, who reports the facts to the State Department, states that the post office is visited daily by hundreds of persons, expressly to examine the new boxes.

The Mexican authorities have a good opinion of American bridge work. In a late address upon the public works of the United States, M. Malezieux, of Paris, complimented the American engineers upon their skill in building bridges of large span, and says that all other nations may borrow many useful hints from them in regard to the use of compressed air in laying foundations.

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SEE PAGE 9.

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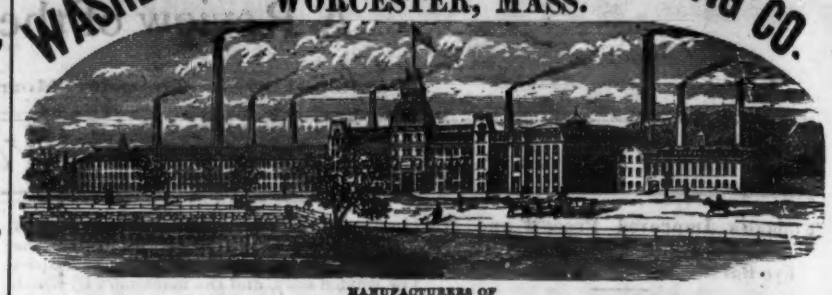

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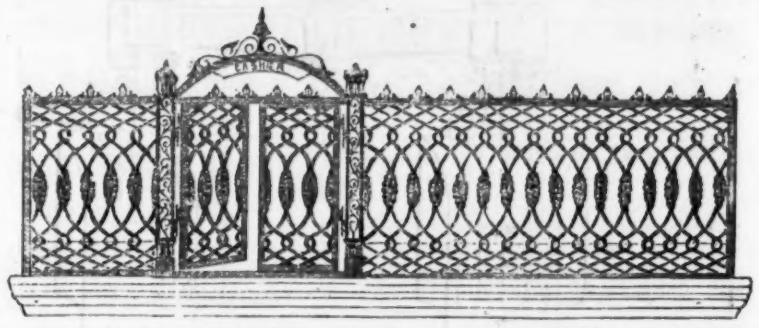

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Mr. Morrell on Vanderbilt's English Rail Order.

Hon. Daniel J. Morrell, of Johnstown, Pa., President of the American Iron and Steel Association, has sent a letter to the New York *Tribune*, from which we quote as follows:

The purchase of this lot of 12,000 tons of English steel rails, at a cost of at least $12 per ton over the price at which American rails could have been placed on the line of the New York Central Railroad, would have surprised me if it had been made by almost any one else than Mr. Vanderbilt; but knowing the anti-American sentiment—if I may not say prejudice—which has prevailed in the government of that road for many years, I was not unprepared for the folly it has committed.

It is barely possible that Mr. Vanderbilt may think he is justified in paying the difference named for English rails, but such a supposition is not creditable to his intelligence, and the statement of the "prominent official," that it is well known among railroad men that the utmost limit of wear for American steel rails, as now manufactured, is five years when they are subjected to the strain of heavy traffic, such as continually passes over the New York Central Railroad, is such a bold assertion of what is absolutely and entirely untrue, that I must suppose it to be the result of blind ignorance. That some American steel rails may not, under certain conditions, last five years, or even one year, may be true, and it is equally true of foreign rails. The usual guarantee of American rails is five years' wear, with an agreement to replace all such as give out from fair usage within that time; and for this guarantee no extra charge is made. It is not fair for Mr. Vanderbilt to suppose that all American manufacturers of steel rails are so stupid as to make an inferior article, when, with the best of materials to start with, they can, with the practice of intelligence and skill, make a good rail with just as little cost as they can an inferior rail.

AMERICAN RAILS USED FOR A DECADE.

It takes some little time and experience to come to the best results in all trades, but there is perhaps no trade or process practiced in which the inducement to achieve the best possible results is so strong as in the making of steel rails, and the American makers have not been slow to learn that fact and to profit by it. As I have said above, it costs no more with good material to make a good rail than a poor one, and the result is that very few poor steel rails are being made by any manufacturer anywhere.

The hardness, or temper, of the rails is regulated by the amount of carbon the steel contains, and this is usually controlled by the roads that use them, some railroad managers requiring their rails much softer than others, preferring toughness and immunity against possible accidents from breaking, to the extreme hardness which would insure greater endurance. American rails have been used for more than 10 years on many of our leading roads, and for the last six or eight years more than 1,500,000 tons have been put down, and I am ignorant of the first instance of any such complaint as would justify the assertion so boldly made by this "prominent official"; indeed, I know exactly to the contrary.

In every large lot of rails there is a liability to be a few imperfect ones, from flaws in the ingot or from mechanical defects which cannot be detected by the closest and most careful inspection, but these imperfections usually disclose themselves during the first few months' service. This is equally true of English as well as American rails. The number of rails so failing within five years is so inconsiderable that the guaranty has never been considered any great hardship to manufacturers. If the utmost life of the American rails is limited to five years, as asserted by a "prominent official," the New York Central might have its road kept constantly supplied with new rails under the usual American guaranty, without any expense to the company beyond the first outlay.

The 12 years' guaranty is what Mr. Vanderbilt claims as his justification for sending his money abroad, rather than giving it to the American people, who alone furnish the traffic upon which his road prospers. If he lays these English rails upon easy grades and straight lines and keeps his road-bed in good order, the guaranty will cost the makers nothing beyond the few rails that may fail from undetected mechanical defects, and such would be the result with American rails; but if he lays them on steep grades and short curves, or in his yards, where shifting is being done with heavy locomotives constantly stopping and starting, he will have to call on his English friends to replace his rails, many of them inside of five years, and a large majority, if not all of them, within the 12 years.

THE CENTRAL'S HOSTILITY TO AMERICAN STEEL INTERESTS.

As far as I have heard, the New York Central Railroad has never been very friendly to American rail makers, certainly not since it came under the Vanderbilt rule. I am not aware that Mr. Vanderbilt has ever asked for 12 years' guaranty from American makers, or even asked from them—certainly not from very many of them—at what price or on what terms they would supply his wants. His purchase of these foreign rails would seem to have some other motive than the one given. The "economy" plan is too thin for credence.

It is possible that Mr. Vanderbilt wishes in this way to call the attention of the country to the policy of protection, which is at this time securing to the American mills orders from all roads but this one, and that he intends to make an assault upon the American system which secures the American markets to American producers, and, under domestic competition, brings prices lower than his English friends would sell him provided that competition was removed. He should remember his 40,000-ton contract with English makers at $112, gold, which was not completed until American competition had reduced the cost here to about one-half that price.

I remember once meeting my esteemed friend, the late Hon. John A. Griswold, in New York, shortly after he had established the Bessemer Works at Troy, and was not a little surprised to find him in an unusually excited frame of mind for one of his ordinarily calm and quiet, and always amiable and gentlemanly, disposition; and upon inquiring what had happened to so disturb him, he replied that, in anticipation of finding encouragement and perhaps patronage from the New York Central Railroad in his new enterprise, his works being located on its line and giving it a large amount of traffic, he had that morning called on Commodore Vanderbilt at his office, having this end in view. After having waited in the ante-room somewhat beyond the usual time, he was at length surprised by the Commodore's making his appearance in the doorway leading to his private room, holding in his hand the card which Mr. Griswold had sent in, and demanding, in a loud voice, so that others sitting there waiting, like himself, couldn't help but hear, "Who in h—l is this man, John A. Griswold, who wants to see me?" Mr. Griswold rose, and merely remarked that he called expecting to meet a gentleman, but being disappointed, would retire. He did retire, and I think he never afterward sought an interview with Mr Vanderbilt. If they had any future business transactions, they were certainly of Mr. Vanderbilt's seeking. Possibly the present Mr. Vanderbilt may be cherishing something of the same sentiment, and when a "prominent official" makes him say "he has a perfect right to make his purchases of materials where he chooses," wouldn't he perhaps be a little nearer the mark were he to go on a little further, and make him exclaim, as his father did to Mr. Griswold: "Who the h—l are these American rail makers, that they should be meddling with my affairs?"

Whatever reasons the New York Central Railroad may have for not using American rails, economy is surely not one of them. There can be no economy in buying foreign rails, no better than our own, at an advance of at least 25 per cent. If Mr. Vanderbilt owns this road—all of it—he certainly has a right to do with it as he pleases. He can knock it in the head at once, or he can give it a more lingering death by a constant, but gradual, exercise of this sort of economy. If it is all his road, and all his money that is being thus fooled away, it would seem as though he would perhaps have the worst of it in the end, and outsiders need have little or nothing to say; but he has no right to injure American manufacturers by giving false reasons for such folly.

The Underground Telegraphs in Germany.

The Berlin correspondent of the London *Times* gives the following data on the underground telegraphs in Germany:

The Reichstag has voted the sum of $440,000 for the further construction of subterranean telegraph wires. Germany will soon be intersected with a complete network of this invisible and inaccessible means of communication, which no thunder-storm can destroy and no roving enemy can readily cut. In 1875 it was first proposed to connect by underground cables all the chief centers of commerce and industry in the empire, all the fortresses and places of arms, the cost being reckoned at about $8,000,000. The first experiment of the kind was made by the sinking of a wire between Berlin and Halle, which has been subjected to the strictest scientific tests, and yielded highly satisfactory results, not a single interruption being recorded. When the whole work is ended the German empire will be crossed by two great main cables, stretching from Königsberg in the north to Strasburg in the south, and from Hamburg in the northwest to Ratisbon in the southeast, intersecting at Berlin. Strasburg will also be connected with Metz. In addition, another sunken wire will curve away up from Strasburg through Cologne to Hamburg, while Ratisbon and Königsberg will similiarly be connected. An underground wire will also bind together Berlin, Dresden, Stuttgart and Munich, communicating with a fifth main cable passing through South Germany. In three years, it is said, the whole network thus planned by Dr. Stephan, the Postmaster General, will be completed. The half is already finished. An underground cable now connects Berlin, Halle, Leipsic, Cassel, Frankfort, Mayence, Mannheim, Carlsruhe, Rastadt and Strasburg; another line runs from Berlin through Magdeburg, Brunswick, Hanover, Münster, Düsseldorf and Barmen-Elberfeld to Cologne, while Berlin and Hamburg are also connected, throwing out branch lines to Kiel and Cuxhaven, to Bremen and Emden, thus joining the North Sea cable communicating with England and America. A sum of $4,300,000 has already been spent on this subterranean enterprise, and the money now voted will be employed in connecting the towns and harbors along the Baltic shore for the furtherance of commerce and coast defense—a work, says the Postmaster General, which should be proceeded with as speedily as possible.

A Mine Locomotive.—A compressed air locomotive for mines is now at work in the Pensher Colliery, near Pensher station, Durham, England. It is described as having an iron frame 6 feet in length, upon which is an iron reservoir 2 feet in diameter, and containing 20 cubic feet of air at a pressure of 200 pounds upon the square inch. This air supplies two small cylinders, 4 inches diameter, 8 inches stroke, working on four 15-inch wheels coupled, gauge 30 inches. There is no link motion, but only two loose eccentrics of the ordinary kind, attached direct to the slide valve, so that if it is desired to reverse the engine, the whole machine is pushed backwards until the eccentries get into the proper position. The air is cut off at one-fourth, and it works from 200 pounds on the square inch down to 80 pounds. The whole machine weighs 14 cwt., and costs from £50 to £60. It draws from two to three tons of coal along a level road, at a speed of from six to eight miles an hour, and is completely under command. It works on roads rising 1 in 15, but it is not desirable to put it on any steeper gradient.

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Compressed Air Motors for Street Cars.

An able and exhaustive report on the use of compressed air motors for street cars, has been made to the Pneumatic Tramway Engine Company, of this city, by Gen. H. Haupt, C. E., who has published it in full in the proceedings of the Engineers' Club of Philadelphia. The pneumatic motors are employed by this company in a manner differing in some important details from that hitherto employed, the economy and efficiency thus secured being pronounced by Gen. Haupt to be remarkable. The air is compressed by the well-known Delamater compressors to 350 lbs. per square inch, and it is then heated by passing it through a tank of water, a method which secures great advantages. The compressed air is stored in reservoirs under the motor, and before being used is admitted to a tank of water, placed on the front of the car, containing 5 cubic feet of water drawn from a stationary boiler under 80 lbs. pressure, and having a temperature of 320 degrees. The air is not admitted to the motor cylinder at 350 lbs. pressure, but at a much lower pressure, so that after passing the tanks and becoming heated and charged with vapor, it enters the cylinders at 250 lbs., requiring but a comparatively small volume of the dry air from the reservoirs to do the work. This uniformity of pressure is secured by means of a reducing valve placed in the pipe, which acts automatically until the pressure is reduced below the pressure of admission. When the air has become so far exhausted as to fall below this pressure, the reducing valve remains fully open. Even if the water should be cooled down 100 degrees and the power of the heated air would thus be reduced, it would still retain great efficiency.

Another beautiful feature of this motor are the suction valves in the exhaust passages, which, whenever the tension of air in the cylinder falls below that of the atmosphere, open and permit the stroke to be completed without back pressure, so that it is not necesary to use more air than will overcome the resistances, and this may vary from a full cylinder to a very small fraction, or between limits as extreme as one to thirty. The motor cylinders are so arranged that in descending steep grades they act as air pumps and at the same time as air brakes, by which means it is found that in running down grade on the Second Avenue Railroad, pumping back against a pressure of 200 lbs. in the receiver, the pressure was increased 7 lbs. in a distance of 4 miles.

To appreciate the importance of this result, it must be observed that not only is all the air saved in running down hill and not a particle used, but half as much or more as would have been expended with the aid of heat and vapor upon a level is pumped back again, and at the same time the action of pumping back acts as a most efficient brake. An interesting fact in connection with the compressing plant is that the air, after first being compressed to five atmospheres, is passed into a tank of cold water and from there to a second compressor, where it is reduced in volume to one-fifth a second time, making one-twenty-fifth of its original volume. The water tanks perform the important office of not alone cooling, but also of drying the air, strange as that may seem.

The explanation of this apparent inconsistency is simple: Ordinary atmospheric air contains more or less water, which on reduction of temperature below the dew point, is deposited to a certain extent on cold surfaces. In compressing 25 cubic feet of air into one and cooling it with water, it is estimated that 24 parts out of 25 of the water will be absorbed and removed. When this dry air is again expanded by being utilized in the motor, it cannot deposit ice, because there is no contained water to form ice; and hence the fact, which it is said has excited great surprise among observers, that no frost whatever was formed except on the outside of the pipes from condensation of outside moisture.

Gen. Haupt then discusses the question: What grades can the pneumatic motor overcome and what load can it carry? He comes to the conclusion that an 8-ton motor should be able to haul twice its own weight on a grade of 66 feet, or two cars; on a grade of 132 feet, one car; but two cars could be hauled by increasing the amount of air and cutting off, say, one-sixth instead of one-eighth.

It would be a most serious disadvantage if the general introduction of pneumatic motors should require the abandonment of the old plant. Fortunately such abandonment is not only unnecessary, but the best possible system for the economical operation of a line and for the accommodation of the public, consists in the use of small cars and coupling two or three in a train under one conductor at hours when the travel requires it. This could be easily done by a 6-ton motor which could carry two cars over grades of 178 feet to the mile and one car over grades of 240 feet to the mile. Steeper grades could be overcome by using more air. The air compressor now working at the Second Avenue station, rated at 100-horse power, develops 66-horse power at a mean pressure of steam and 73 strokes per minute. It will fill a car reservoir of 160 cubic feet in about nine minutes.

The results of some experiments with the pneumatic motors on the Second Avenue Road were remarkable. The motor started on a trip from 127th street with an air pressure of 360 lbs. and a temperature of water of 324 degrees, and made three trips, at the conclusion of which the pressure was 95 lbs. and the temperature of the water on return 180 degrees. Gen. Haupt makes the following estimate of cost for the Second Avenue Railroad, on a basis of 16,000,000 passengers per annum, the actual business of the road:

	Cents.
Running expenses per passenger, inclusive of dividends and general expenses, by horse-power	2.88
Estimate by use of pneumatic motor	0.89
Cost per passenger by horse-power, including general expense, but not dividends	4.10
Estimate by use of pneumatic motor	2.12
Cost per passenger, by horse-power, including both general expenses and dividend	4.55
Estimate by use of pneumatic motor	2.57

The speed of the trains so worked can be easily made to reach 8 miles per hour. Skilled engineers are not required to run the motors, as a man of ordinary intelligence can learn it in a single trip. What is a most remarkable and beautiful feature of the contrivance is that a driver, however ignorant or careless he may be, cannot fail to use exactly the proper amount of air for the resistance to be overcome, and cannot waste it. If he admits too little, the car slackens speed or stops; if too much, he must shut off the brake. All is done by the movement of a lever back or forward; no other brake is needed, and the motion of the car is a perfect governor.

Gen. Haupt says in conclusion: Horse railroads and stages are doomed; their patronage is rapidly departing, but the compressed air motor comes forward opportunely to save surface roads from ruin, retain their efficiency, usefulness and dividend-earning capacity, utilize existing roads, plant and employees, and secure a change of system almost without any expenditure of capital, since the sale of horses and harness will generally pay for the motors that supersede them.

The London "Times" on the Canadian Tariff.

The London *Times* is very severe in its comments on the new Canadian tariff. In an editorial reported by telegraph it says:

The *Times* in an editorial says it is impossible to contemplate the new Canadian tariff without a feeling of shame and humiliation. The feats of the Finance Minister (Mr. Tilley) are remarkable. By way of fostering Canadian industry, he has proposed an import duty of 2/ a ton on coal. This will be a bonus to the owners of the Nova Scotia coal fields, but such manufactories as Canada has are almost wholly in Montreal, where Nova Scotia coal does not reach. He is proposing to foster these manufactories by taxing their motive force. This is but one illustration, but a flagrant one.

One of the probable effects of the tariff will be the unsoldering of the confederation that has been compacted with such care. Ontario is set against Nova Scotia, and in the attempt to make the maritime provinces buy the manufactures of the West, New Brunswick and Nova Scotia are set against Ontario. Another singular assistance to native industry is found in the new tax on iron. A duty of 20 per cent. on steel rails is scarcely likely to develop the making of railroads, on which, in Canada as elsewhere, the multiplication of trade greatly depends. One stroke of business on the part of Mr. Tilley is unparalleled. As soon as the general election was over and higher duties were seen to be imminent, the warehousemen of the Dominion passed as many goods as they possibly could through the custom house. There was nothing in this for which any one was to blame. But customs duties are ordinarily paid into the Bank of Montreal. The other bankers of these acute traders made some difficulty about advancing moneys to pay the duties, which were thus transferred to the Hon. Mr. Tilley's rival establishment. Application was made to the Hon. Mr. Tilley to order the Customs Department to open accounts at these other banks and pay into them the checks drawn upon them, which he obligingly consented to do. This transaction is so extraordinary that we should have disbelieved the whole story if the Hon. Mr. Tilley had not frankly admitted its accuracy, without apparently seeing that he had, as his opponents said, put himself in the position of the merchant who had been assisting to rob his own till. We have rightly renounced all attempts to overrule the action of our colonists, but we should be guilty of a dereliction of duty if we concealed our real opinion of the supreme unwisdom of the tariff Canada is about to adopt. The tide of depression on the other side of the Atlantic has commenced to turn. We have many facts brought before us as evidence of a change, but the Canadians could not wait for the revival of prosperity coming to them as to their neighbors, and have preferred to adopt the suicidal plan of fostering their industry by crippling it. We recommend the Canadians to have the courage of their convictions. Why do they not act as did the Japanese until recent years—isolate themselves from the rest of the world, and absolutely prohibit commercial intercourse beyond the Dominion?

As an incentive to American manufacturers to send exhibits to the Mexican International Exhibition, we are told that the French, Germans and Italians are making great preparations for displays, which shall prevent an increase of American trade with Mexico. Whether this is true or not, there seems to be good reason to believe that there is room for an increase of trade with Mexico, and as to the articles most needed in a country like Mexico, Americans have no reason to fear European rivals if their goods are properly presented. Germany, France and Italy have specialties in articles of luxury which the United States cannot hope to compete with sucessfully; but in machinery, household goods of all kinds and the cheaper fabrics, we have decided advantages. Our Centennial Exhibition was a revelation to us, not so much of our weakness in certain departments of art labor, as of our surpassing strength in the manufacture of machinery, tools, &c., and in everything that machinery can make.

The North of England iron manufacturers have issued the following: "That seeing the figures submitted to Mr. Shaw Lefevre show that the earnings of certain classes of workmen in plate and sheet mills are excessive and altogether disproportionate to the prices obtainable for plates and sheets, it is resolved that notice be given to the operative secretary of the Board of Arbitration that the employers claim, after the 30th April next, a reduction of 15 per cent. in the wages of rollers, heaters and shearmen in plate and sheet mills, and of forge rollers and shinglers working for plate and sheet mills at all works connected with the Board of Arbitration." The operative secretary has received the notice, and is getting up information to lay before the next meeting of the Board of Arbitration, which will be held in the course of a week or so. It is expected that the matter will be referred to an arbitrator and speedily settled.

McNEALS & ARCHER,

BURLINGTON, N. J.

Flange Pipes.

General Foundry Work.

CAST IRON PIPES

FOR WATER AND GAS.

ESTABLISHED IN 1845.

SINGER, NIMICK & CO.,

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MANUFACTURERS OF ALL KINDS OF

HAMMERED AND ROLLED

STEEL,

Warranted Equal to any Produced.

BEST REFINED TOOL CAST STEEL

For Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-Knives, Cold-Chisels and Machinists' Tools generally.

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For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

Sheet Steel

For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws, Stamping Cold, &c., &c.

SIEMENS-MARTIN (Open-Hearth) PLATE STEEL

For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.

☞ All our Plate and Sheet Steel being rolled by a Patented Improvement is unequaled for surface finish and exactness of gauge.

ROUND MACHINERY CAST STEEL

For Shafting, Spindles, Rollers, &c., &c.

File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.; Cast and German Spring and Plow Steel.

"Iron Center" Cast Plow Steel.
"Soft Steel Center" Cast Plow Steel.
"Solid Soft Center" Cast Plow Steel.

Finished Rolling Plow Coulters with Patent Screw Hubs attached.
Agricultural Steel cut to any pattern desired.

Steel Forgings made to order.

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MIDVALE STEEL WORKS,

CRUCIBLE AND OPEN HEARTH STEEL.

TIRES AND AXLES

OF EVERY DESCRIPTION.

TOOL, MACHINERY AND SPRING STEEL CASTINGS AND FORGINGS.

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WAREHOUSE: 12 N. 5th St., Philadelphia, Pa.

ESTABLISHED 1847.

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For every kind of service, including *Street, Mine and Lumber Tramways.* Wheels furnished in rough bored or on axles. Chilled castings made to order.

The Standard Steel Works.

LOCOMOTIVE AND CAR WHEEL TIRES,

Manufactured from the celebrated OTIS STEEL.

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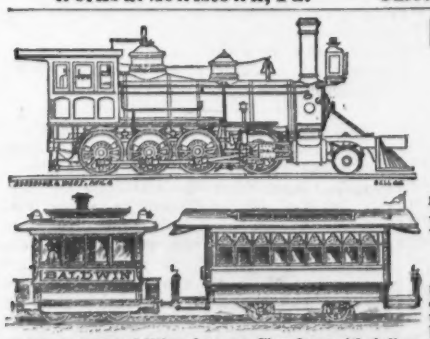

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Manufacturers of

RAILWAY FREIGHT CARS, Car Wheels and Castings.

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Proprietors of the Sewanee mines, capacity of 50,000 bushels of coal and coke per day.
Several important institutions of learning, including the University of the South, also the celebrated Beersheba Springs, are located upon the line of this Railroad.
Being also the proprietors of several extensive tracks of very fine lands, offer special inducements to colonies. Communications addressed to the General Manager will receive prompt attention.

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S. B. LOWE,

Pig Iron, Storage & Commission.

Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.

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"WIRE CUTTER AND PLIER COMBINED."

Specially Adapted for Use on Wire Fence.

Also Manufacturers of

Blacksmith and Machinists' Stocks and Dies, Plug and Taper Taps, Hand, Nut and Screw Taps, Pipe Taps and Reamers.

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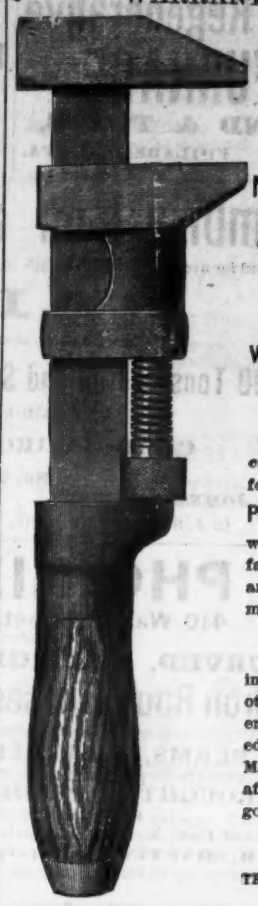

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GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the *increased demand* for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

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ROLLS,

Both Solid and Hollow,

Ore and Clay Pulverizers, Rotary Squeezer Haskin's Patent Double Spiral Pinions, and Rolling Mill Castings of every description.

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TACK PLATES,

Forgings of every description.

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HORSE NAILS.

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Nos.	5	6	7	8	9	10
Per lb.	26¢	23¢	21¢	20¢	19¢	18¢

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Dealers in

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MINERS' CANDLES.

superior to any other Light for Mining Purposes. Manufactured by

JAMES BOYD'S SON,

Nos. 10 & 12 Franklin St., New York.

The Service of Paper Car Wheels.

The Pullman Palace Car Co. furnishes the following tables, showing the mileage of a lot of 129 paper wheels under their cars, taken consecutively:

Statement Showing Mileage of 42-inch Paper Wheels under Hotel Cars Pennsylvania Line and Chicago and Alton Sleepers to March 1, 1879.

No. wheel.	Total wheelage to March 1, '79.	Location March 1, '79.
215	144,572†	Stock.
216	179,851	In service.
217	199,215	"
218	199,215	"
219	222,980‡	"
220	222,980‡	"
221	40,997†	Stock.
222	227,313	In service.
223	215,789	Stock.
224	214,828†	"
225	145,263†	"
226	78,408‡	In service.
227	180,552	"
228	77,717‡	"
229	227,313‡	"
230	77,717‡	"
231	174,792†	Stock.
232	138,262†	"
233	227,313‡	In service.
234	227,313‡	"
235	214,164	Stock.
236	214,164	"
237	231,152	"
238	231,152	"
239	196,235	In service.
240	196,235	"
241	235,832	"
242	235,842	"
243	220,232	Stock.
244	220,232	"
245	244,194	In service.
246	244,194	"
247	277,275	"
248	277,275	"
249	236,826	"
250	236,826	"
251	222,169	Stock.
252	222,169	"
253	212,062	In service.
254	212,062	"
255	276,236	"
256	276,236	"
257	309,693	"
258	309,693	"
259	283,383	"
260	283,383	"
261	238,768	"
262	238,768	"
263	316,068	"
264	316,068	"
265	252,948	Stock.
266	252,948	"
267	313,777	"
268	313,777	"
269	237,810	"
270	97,033†	"
271	244,356	In service.
272	284,266	"
273	177,863	Stock.
274	177,863	"
275	251,292	In service.
276	251,292	"
277	159,144	"
278	159,144	"
279	271,898	"
280	271,898	In service.
281	324,230	"
282	324,230	"
283	294,425	Stock.
284	294,425	"
285	270,536	"
286	270,536	"
287	295,106	In service.
288	295,106	"
289	280,410	"
290	280,410	"
291	310,261	Stock.
292	310,261	"
293	93,236†	"
294	234,213	"
295	233,545½	In service.
296	233,545½	"
297	285,773	Stock.
298	285,773	"
299	241,256½	In service.
300	241,256½	"
301	233,044	"
302	233,044	"
303	290,483½	"
304	290,483½	"
305	233,044	"
306	233,044	"
316	48,054‡	"
325	227,313‡	"
328	222,980‡	"
329	214,828‡	Stock.
330	222,980‡	In service.
332	227,313‡	"
334	227,313‡	"
335	179,259‡	"
336	227,213‡	"
345	78,408‡	"
347	51,010‡	"
362	228,865	"
363	228,865	"
364	150,238½‡	"
365	160,238½‡	"
366	156,518½	Stock
367	156,518½	"
368	196,706	"
369	196,706	"
370	188,082	In service.
371	188,082	"
372	202,628	"
373	202,628	"
374	133,490	"
375	93,580	Stock.
376	173,208	"
384	95,066‡	In service.
385	95,066‡	"
415	117,232‡	"
416	117 232‡	"
455	68,129‡	"
456	68,120‡	"
510	65,804‡	"
511	65,804‡	"
577	173,208‡	"
	26,918,552	

Total wheelage to March 1, 1879, of 129 wheels under hotel cars on Pennsylvania line, and sleepers on Chicago and Alton line, 26,918,552 miles. Average per wheel, 211,957.1 miles.

Wheelage marked thus † shows service on first application prior to first removal for turning up. Wheelage marked thus ‡—wheels still in service on first application.

Note.—By wheels "in stock" is meant wheels removed for turning up, &c., and carried as extra to replace other wheels when it becomes necessary to remove them for turning up or any other cause.

A test was recently made of a steel and an iron axle used with paper wheels taken from a couple of Pullman parlor cars, with the following results:

Axle No. 1 was of iron, had been used with paper wheels, and had made a mileage of 312,000 miles. Diameter of journals, 3 3-16 inches; at center of axle, 4¼ inches.

Axle No. 2 was of Otis steel, had been used with paper wheels, and had made a mileage of 282,000 miles. Diameter of journals, 3 11-32 inches; at center of axle, 4 inches.

	Blow.	Fall. Feet.	Before blow. Inch.	Deflec. after blow. Inch.	Total Inch.
Axle No. 1 iron	1	25	½	10⅞	11⅜
	2	25	10⅞	Broke*	....
Axle No. 2 steel.	1	25	½	11 3-16	12 5-16
	2	25	11 3-16	½	12 5-16
	3	25	½	10⅞	11⅜
	4	25	10⅞	⅞	11¾
	5	25	⅞	11⅜	12¼
	6	29	11⅜	⅜	12¾
	7	40	⅜	16	16⅜
	8	40	16	1	17
	9	40	1	15⅜	16⅜

* Fracture granular.

The last mentioned axle, after being taken from the supports and cooled two hours, was given another blow, breaking it with a fall of 40 feet, the fracture being granular.

Co-operative Stores.

One of our contemporaries has the following upon co-operative stores:

"The astonishing success of the Rochdale enterprise, which began with a capital of $7, and 30 years afterward did an annual business of $1,500,000, has not been overlooked by American workingmen. Numerous experiments in co-operation have been made, especially in Ohio and Massachusetts, some of which have fully met the expectations of their promoters. On the other hand, many have miscarried; but it is proved by the reports issued from the labor bureaus of those States that failure was in each case chargeable to overt or clandestine divergence from the methods and principles of their Rochdale exemplar.

"To such a departure, for instance, from wholesome precedents was due the collapse of the great organization known as the New England Protective Union, which at one time controlled more than 400 branch stores, and which, starting with a box of soap and a half chest of tea, traded in its best days to an amount ranging from $1,000,000 to $2,000,000 annually. But gradually this association fell into the same mistakes which have been fatal to so many experiments in France. Outside funds were borrowed at high rates of interest; or a controlling share of the capital invested was conceded to non-producers; or the management was intrusted to incompetent persons having nothing at stake in the enterprise; or, worst of all, a violation of the rule to buy and sell for cash was tolerated.

"A better prospect of permanent success seemed for a time to be afforded by the more recent attempt at co-operation in New England, controlled by the organization known as the Sovereigns of Industry. Between 1874, when this association started, and the close of 1875, the number of branches or councils had risen from 33 to 166, while the membership had grown from 3500 to 20,000. Two years later, however, both the councils and the number of members had diminished by nearly 50 per cent., and a good many failures had occurred in the union stores. Here the goods were not sold at retail prices, the profits being divided at the end of the year, as in the Rochdale scheme; but, as a rule, the sales were made with a small allowance above cost to meet expenses. Of the cases reported, however, some appear to have been notably successful. For instance, the union store at Natick, where all purchases and sales are strictly for cash, paid $39 in 10 years by way of dividends on each $10 share, besides the 6 per cent. required by law. Precisely analogous results are reported from Ohio, according as the associations rigorously adhered to or swerved from the Rochdale model.

"Let us look now a little closely at this Rochdale precedent, and see what these methods are whose scrupulous application everywhere insures success. In the first place, there was no admixture of non-producers in the membership—no reliance on borrowed capital. The society was composed originally of 28 flannel weavers, who set out to become their own purveyors. One of the fraternity was placed in the position of salesman, and their scanty stock was stored in a room hired at a yearly rental of $50. So prompt and profitable, however, was the sale of this initial stock for ready money, that the experiment soon acquired large proportions, and the number of operatives belonging to the society rose to many thousands. It is a remarkable fact that the profits earned on capital in the second year, 1845, were 12 per cent., and that they have never since fallen below 25 per cent., ranging from that figure to 47 per cent. As early as 1847, there seemed to be a necessity for adding to the provisions sold, cotton and woolen fabrics, to a moderate extent, and in 1850 a butcher's shop was appended, followed by a bakery and a coal yard. Moreover, a co-operative principle was applied to production as well as distribution, shoe-making, tailoring and other manufacturing undertakings having been entered upon in 1852. Nor was it long before this workingmen's association set apart 2½ per cent. of the net profits—which sum now exceeds $5000 a year—for library purposes.

"At Rochdale, as well as in the almost equally notable association at Halifax, the management is wholly in the hands of those who had previously been wage laborers, chosen by a central committee with reference to their honesty and expertness. A wise precaution is also taken to limit holders of shares in these stores to 100 of $5 each, and no individual is permitted to represent on voting occasions more than the maximum named. Such a safeguard against combinations to centralize power has been found indispensable. Care has been taken, too, to hinder stockholders from being transformed, through excessive profits, into a class of non-working capitalists. Not more than five per cent. per annum is allowed to be paid as interest on the fixed capital, and after a deduction on this score, as well as for library and other educational purposes, all the rest of the earnings are distributed among the patrons of the stores. This is effected by a very simple expedient. The goods are sold, as we have said, at ordinary retail rates, but every buyer receives a tin ticket on which the amount of his purchases is stamped. The dividend accruing to each customer at the end of a quarter is proportioned to the aggregate sum represented by these tickets.

"It is well known that the Rochdale enterprise is not only a financial success of the first order, but has powerfully conduced to the moral melioration of the community. Nor is there any reason why an association started by 28 poor weavers, who could only amass their small initial capital by weekly installments of a few cents each, should not be reproduced in the United States with equally striking and beneficient results. It only needs that methods and principles whose utility has been so signally demonstrated should be thoroughly understood and faithfully followed."

Commenting on the above, we may say that co-operative stores in this country have not in general been successful. And yet, from time to time, people read the wonderful accounts of the great English establishments and wonder why similar ones are not possible in America. Frequent attempts have been made here, but the singularly uniform failures do not appear to have taught our people any lessons. The fact of the matter is that the conditions in this country are decidedly different from those prevailing in England. Here cash payments are the rule; there they are the exception in the groceries, butcher shops and similar stores where the necessities of life are sold. The consequence of this is that the percentage of profit have to be frightfully large in order to enable the shopkeeper to bear the heavy losses from bad debts. Then, too, in the large cities servants have a fee or percentage for influencing custom in a particular direction. The consequence of all this is, that the difference between the cash basis and the credit basis without the fee system is so great that a very enormous profit can be made by the co-operative establishments. If our readers wish to judge of the actual margins on staple articles upon which a co-operative store would have to thrive, it is only necessary to buy a copy of some paper like the *American Grocer* and compare the wholesale rates with those of the nearest grocer. It will be found that the margin is not large in the staple articles at least. Wholesale and retail prices in this country are not sufficiently far apart to make it worth while, in the majority of cases, to undertake the annoyance and risk of a co-operative store. Help for the poorer classes must come in a different direction. For the rich the burden of getting fine groceries is not sufficiently great to justify them in starting institutions like those described in the article we have named.

USE THE BEST.

NEW

AMERICAN FILE COMPANY.

THE NEW AMERICAN FILE COMPANY have the exclusive right to use the Bernot process for cutting Files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing Files and Steel.

NEW AMERICAN FILE CO., Pawtucket, R. I.

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

89 Chambers and 71 Reade Streets, N. Y

Paris, 1878. *For Superiority.*

McCAFFREY & BRO.,

PENNSYLVANIA FILE WORKS,

Philadelphia, Pa., U. S.

Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

TENNIS & WILSON,

SUCCESSORS TO

J. CLARK WILSON & CO.,

Manufacturers, Exporters and Jobbers of Hardware,

82 Reade Street, NEW YORK.

SOLE AGENTS FOR

SNELL MFG. CO., Boring Machines, Augers, Auger Bits, Car Bits, Jennings' Pattern Auger Bits.
WILSON MFG. CO., Coffee Mills, Vises, Jack Screws, &c.
CLARK & CO., Butts, Blind Hinges, Gate Hinges, Thumb Latches, Axle Pulleys, Sash Bolts.
OAK HILL MFG. CO., Brackets, Barn Door Hangers, Cylinder Heads, Lamb's Tea-Pot Handles, Coat and Hat Hooks, &c.
NASHUA LOCK CO., Locks, Knobs, &c.
TAYLOR MFG. CO., Bells, Weed's Molasses Gates, &c.
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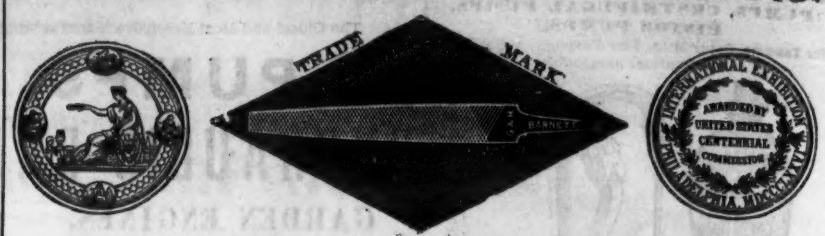

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Metallurgical Notes.

THE MANUFACTURE OF SPIEGELEISEN.

Prof. Wedding and other eminent German metallurgists have endeavored, during the last few years, to induce the ironmasters of the famous Siegen district to make efforts to produce ferromanganese, or at least a higher grade of spiegeleisen, instead of their present product, in order to meet the competition of ferromanganese. A recent interesting contribution to the literature of the subject is that of Mr. Emil Huwalth, of Cologne, who has published, in the *Verhand. d. Ver. f. Beförderung d. Gewerbfl.*, a paper containing a valuable summary of the conditions affecting the better utilization of the manganese contained in the charge and the production of a higher grade of metal. The best grade of Siegen spiegel, which is chiefly exported to this country, is that of Au, which contains quite uniformly from 11 to 12 per cent. of manganese and 0.04 to 0.08 per cent of phosphorus. It is this uniformity which is claimed to constitute the main advantage of spiegel over ferromanganese, which, it is stated, varies in its composition with almost every cast. This, Mr. Huwalth goes on to say, will not appear astonishing if the conditions are examined under which spiegeleisen is produced in the blast furnace. In the Siegen works the charge for spiegel generally consists of 75 to 90 per cent. of calcined spathic ore and of 25 to 10 per cent. of manganiferous limonites, the former ore holding about 48 per cent. of iron and 10 per cent. of manganese, while the latter varies considerably, running from 18 to 35 per cent. of iron and 10 to 20 per cent. and more of manganese. Assuming the following charge, 75 per cent. of calcined carbonate ore (48 per cent. iron, 10 per cent. manganese) and 25 per cent. limonite (20 per cent. iron and 20 per cent. manganese), calculation would show the ratio of iron to manganese to be 100 to 30.5, so that if all the manganese would go into the pig, the percentage of manganese in the spiegel would be 23.36. This, however, is by no means attained by the present mode of manufacture. Generally the product from such a charge would contain, in well-conducted works, not more than 12.5 per cent. of manganese, so that 53 per cent. would be lost. Uusually the proportion is more unfavorable still, only 40 per cent. entering the spiegel, especially if pig holding as much as 12 per cent. of manganese is to be produced. All the rest goes into the slag in the shape of silicate of manganese. Not even all the manganese in the carbonate ore is utilized, and it is certain that the entire amount of manganese in the limonite which contains it as an oxide richer in oxygen, is lost in the cinder. It might appear strange that under such conditions the limonite is added at all, as it is more difficult to reduce, and as it generally contains much more phosphorus than the spathic ore. Practical experience, however, has taught that it is better nevertheless to add at least 10 per cent. of limonite, in order, first, to obtain the necessary quantity of cinder, and, secondly, in order to retard the smelting. The main reason why the manganese in the carbonates is reduced with greater facility than that contained in the limonites, is that the mixture of the oxides of iron and manganese is most intimate. Singly, oxides of manganese are much more difficult to reduce than oxides of iron, but both together may be brought to a metallic condition without difficulty by the aid of carbonic oxide, the reduction increasing in facility as the proportion of oxide of iron grows. On the other hand, it is extremely difficult to reduce manganese from the silicate, even with solid carbon. Another condition affecting the reduction of the manganese and its retention in the spiegel, is shown by the fact that the point of fusion of pig increases with the percentage of manganese, so that it is profitable to use as highly heated blast as possible when running on spiegel. But then again, the fusibility of the cinder must correspond with the percentage of manganese in the pig. If the fusibility of the cinder is decreased by a change in the fluxing, more manganese is reduced and less goes into the cinder, which becomes less fusible. The pig also becomes more difficult to melt, though not in the same degree as the cinder. In practice it is customary, when working under new conditions, to start off with a cinder fusing with difficulty. The waste gases from a spiegel furnace are almost always extremely dilute, and do not burn at all or but very little. They generally carry much finely divided ore, coke, oxide of zinc, &c., so suspended that it is almost impossible to purify them, so that even after leaving the combustion chambers they form a dense white smoke. Mr. Huwalth comes to the conclusion that if the proper means are chosen, it will be possible to produce in the Siegen district spiegeleisen containing 30 per cent. of manganese; he warns manufacturers to grade the product with the greatest care, so that consumers can rely upon its uniformity.

BLOWING IN A BLAST FURNACE.

An interesting record of the blowing in of a blast furnace has been published by Mr. J. de Janzé in the *Bulletin d. l. Soc. de l'Ind. Min. de St. Etienne.* Formerly an entire month, or even more, was consumed in beginning a blast after drying the masonry, and enormous quantities of fuel were wasted. The object which it was believed would be well served by this system was to heat the walls and prevent the formation from the first charges of unfused masses impermeable to the ascending gases. After a study of what really occurred in blowing in, it was recognized that a large quantity of coke was consumed uselessly, and that the walls did not reach any higher temperature after a week. Therefore the time for blowing in was reduced in 1874, at the Aubin blast furnace No. 1, to five days, by which the weight of fuel charged without ore was reduced to 15 tons. When in 1876 the blast furnace No. 4 of the Aubin Works (Aveyron, France) was to be started, it became impossible to use the old method of blowing in, because the furnaces had been provided with a closed front, and there were therefore no means of taking coke and cinders out of the hearth filled by them. It became necessary to have recourse to another method—to put on the blast almost simultaneously with lighting the fire. The success was complete, only 3 tons of coke being dumped into the furnace without a corresponding charge, to which should be added 1100 lbs. of charcoal, partly required for making brasque for the hearth and partly as a pure fuel for the start. The furnace in question is 50 feet high, and has a diameter at the boshes of about 15 feet. It was charged in the following manner: The hearth was filled with shavings and chips of wood, which from the cinder-tap level to the tuyere level was mixed with dry bark, in order to prevent too rapid burning and the consequent formation of a hollow space into which the heavier masses above might drop and extinguish the fire. Above this came a layer of about 4½ feet of faggots and dry wood, and then a charge of 500 lbs. of charcoal. This was followed by a mixture of 2600 lbs. of light coke and 520 lbs. of charcoal, upon which was dumped 400 lbs. of light coke, through which was distributed 200 lbs. of a very fusible cinder, the object of which was to slag the ash of the coke. Then actual charges followed, the regular amount of fuel being 1300 lbs. of a mixture of light and heavier coke. The first charge was 1500 lbs. of ore and 725 lbs. of limestone; to this and the next one 110 lbs. of fusible cinder were added, which in the two following was reduced to one-half and then discontinued. After the 21st charge the weight of the charge was increased to 1700 lbs. of ore and 800 lbs. of limestone, a further increase being made after the forty-first charge, so that the corresponding figures were 1900 and 880 lbs. Sixty charges filled the furnace, which was to be charged, as soon as smelting commenced, with 2100 lbs. of ore and 925 lbs. of limestone. Being filled, the furnace was lit at 8 o'clock, and at 12.45 blast was put on, when the flame blew out of the pig and cinder taps, which had to be closed. At 3 o'clock the casting hole was opened, but nothing flowed from it. At 4.30 the temperature of the blast was 428° F. at the side tuyeres and 500 degrees at the back tuyeres. At 7 o'clock the casting hole was opened, and after the removal of a crust, a mass of black, wiry cinder was withdrawn. At 8.40 the gas commenced to burn at the tunnel head, and at 11 and 11.45 tolerably liquid cinder flowed from the furnace. At 1 o'clock it had become very similar in appearance to charcoal furnace cinder. At 5 o'clock nine charges had been put into the furnace, and 15 minutes afterward pig and cinder mixed were tapped from the furnace, so that in less than 24 hours cinder had been obtained regularly, and tolerably hot iron had been produced.

UTILIZATION OF THE WASTE HEAT OF THE BESSEMER CONVERTER.

From the report on the iron and steel industries of the United Kingdom, issued by the Iron and Steel Institute, we learn that Mr. Arthur Cooper, the Bessemer manager of Messrs. Brown, Bayley & Dixon, of Sheffield, is the inventor of a method for heating the blast of cupola furnaces by the hot gases from the Bessemer converters. The plan is said to have proved very successful after 12 months' trial on a large scale, the consumption of coke in the cupola having been reduced to 1.25 cwt. per ton of pig melted.

MANUFACTURE OF FERROMANGANESE AT TERRE NOIRE.

Mr. Emil Huwaldt is our authority for the following statement of the method used at Terre Noire, for the manufacture of ferromanganese: Metallic iron, finely divided, is well mixed with finely ground manganese ores. This mixture is moistened with a weakly ammoniacal or acid solution, and is pressed into forms. The material thus made is smelted in a blast furnace blown at a high pressure with very hot blast. The ore used seems to be a carbonate of manganese.

LINING THE BESSEMER CONVERTER WITH LIME.

The London *Iron Trade Exchange* states, "on undoubted authority," that Mr. Edward Riley, the well-known chemist, has taken out a patent for making a durable lining of lime for Bessemer converters. The lime is first moistened with petroleum or coal oil, and the brick formed of the material afterward compressed by hydraulic or other pressure. "The petroleum is entirely burnt out in the kiln, which leaves the brick firm and solid, and the bricks may be fixed into the converter as lining in the green state and rammed up at once. It will be observed that this process prevents fissures through contraction. The process has been tried by a well-known firm of rail makers at Sheffield, and we have it on the highest authority that the experiments were quite satisfactory. The bricks stood the test well, and the phosphorus was eliminated from Cleveland pig iron."

IRON AND STEEL RAILS IN GERMANY.

A German exchange prints the following figures of the amounts of iron and steel rails called for in that country by public proposals. As the greater part of rails going into consumption is sent through this channel, the following figures will show the relative demand for iron and steel rails:

	Iron.	Steel.	Per cent Iron.	Per cent Steel.
1873.....	58,560	78,157	42.8	57.2
1874.....	80,006	80,696	49.8	50.2
1875.....	47,617	53,405	47.1	52.9
1876.....	25,389	80,841	22.6	77.4
1877.....	14,346	110,436	11.5	88.5
1878.....	8,332	112,469	6.9	93.1

The *Miners' Journal* publishes a letter from Mr. F. B. Gowen, president of the Philadelphia and Reading Railroad Company, addressed to Mr. George A. Hoyt, president of the Pennsylvania Coal Company, declining to take part in the latter's proposed movement to restrict the coal trade, or in any such movement, unless Judge Packer shall take the initiative, as that gentleman "terminated the recent agreement." It also gives the result of a conversation with Mr. Gowen, in which he says that the fact will soon become plain that the quantity of anthracite required this year cannot be produced, and that "when this is demonstrated the advance in price will be rapid, legitimate and lasting, and, in my opinion, this happy consummation will only be retarded by any tampering with the laws of trade by combinations."

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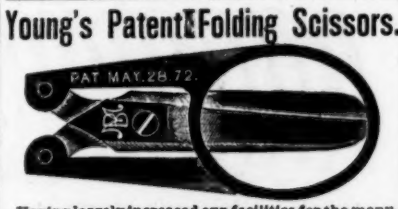

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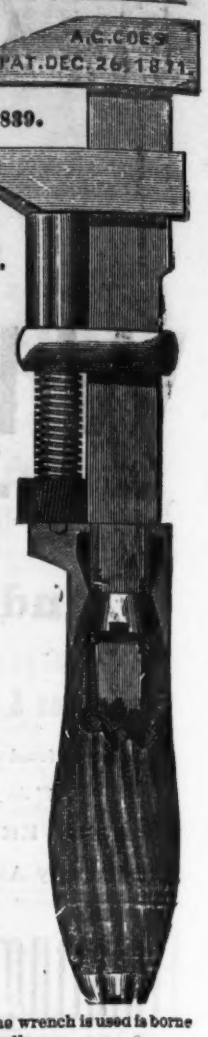

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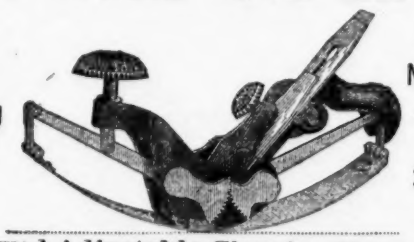

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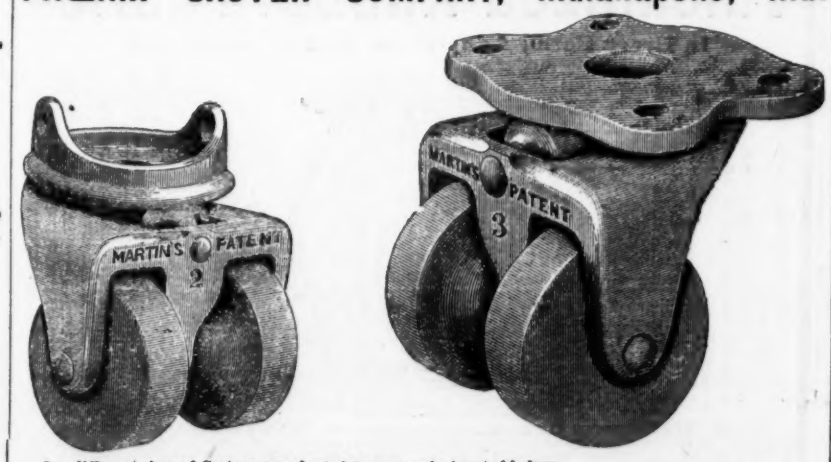

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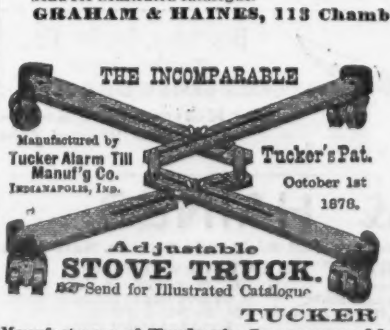

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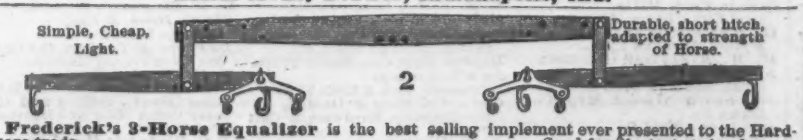

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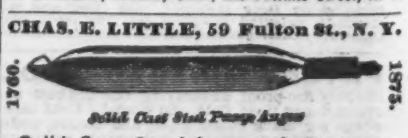

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On Increasing the Production of Blast Furnaces.

In a brilliant essay on the best practical means of economically increasing the production of blast furnaces without injuring the quality, by J. Wolters, of Belgium, the author, after the most complete digest of the Continental literature on the subject published recently, adds a series of reviews to the departments of which he treats. They embody, in a short, concise form, the results of long practical experience and careful scientific training. While we regret that we cannot devote space enough to the subject to allow a complete translation of the essay, we make room for his *resumés*, which embrace the influence of the shape of the blast furnace, the heating of the blast, the mode of charging and carrying off of the gases, and of the management proper upon the working of a blast furnace.

The influence of the shape of the blast furnace and its interior capacity upon its working, may be stated briefly in the following:

1. The interior shape has a less important influence upon the working of the furnace than was formerly supposed. It will not do, however, to adopt at haphazard any shape in preference to another. The furnace engineer will find, by examining the interior shape of a furnace when out of blast, valuable hints as to what shape to adopt in a given case. In general, it is necessary to replace as much as possible the broken lines by a curve, or at least to avoid, if practicable, any acute angles which might act injuriously upon the regular descent of the charges, and would consequently be an obstacle in obtaining an abundant production.

2. A great hight always acts favorably upon the working of blast furnaces by increasing the output, economizing fuel, and even by improving the quality of the pig iron. This latter advantage is chiefly due to the economy of fuel, because thereby a smaller amount of injurious substances are introduced into the furnace. Practically speaking, there is for every particular ore a limit to the hight beyond which an increase offers no advantages or may even become injurious. The nature of the fuel may sometimes necessitate the adoption of a smaller furnace than the one called for, if the best mode of treating the ore were alone considered.

Experience alone can teach exactly what will be the most advantageous hight in any given case. It will be well, however, to follow some general rules:

a. The ore treated being the same, coke blast furnaces must be higher than those using charcoal, so that the oxidizing or melting zone is not enlarged to the detriment of the zone of reduction.

b. The hight may be decreased if the ore is easily reduced. Whenever the mineral is easily reduced and has been calcined, and consequently the tunnel head is not sufficiently cooled by the volatilization of water and carbonic acid, it will be necessary to make use of furnaces the hight of which is considerable (Cleveland). In smelting ore easily reduced and previously calcined, with raw coal, furnaces of great hight are less a necessity, because the gases formed by the coking of the coal sufficiently cool the upper parts of the furnaces (Scotch furnaces).

c. As heating of the blast produces the same effect as an increase in hight of the furnaces, it will be unnecessary to adopt as great a hight as when the blast is cold.

d. Whenever the charge contains a certain quantity of zinc, it would be well not to make the hight too considerable, so that a sufficient heat is maintained in the upper regions to prevent as much as possible deposits of oxide of zinc.

e. For producing foundry iron, blast furnaces must have a greater hight than for the manufacture of mill iron, the ores being the same in both cases. This greater hight is necessary, in order to utilize well the excess of heat developed in the lower regions of furnaces producing gray or dark pig iron.

f. Dense and fine ores, both of which descend more rapidly than the rest of the charge, must be treated in furnaces of relatively considerable hight, so that the reducing gases may have an opportunity to act upon them.

3. As it is necessary to obtain an intense local temperature in the lower region of the furnace, those parts must be accordingly drawn together. Experience seems also to have proved that a distance of 5.3 feet between opposite tuyeres is a limit beyond which it is not well to go. Whenever the refractory nature of the ore or the quality of the pig iron which is to be obtained permits, one should as much as possible approach that limit, and diminish as much as possible the hight from the tuyeres to the boshes. When this latter dimension is great, a large daily production is difficult to obtain. On the other hand, as the capacity of the region of fusion directly influences consumption, the disadvantages which result from too wide a hearth in regard to economy of fuel and the quality of the pig iron, are evident.

4. Strongly inclined boshes, as well as wide and low hearths, favor a rapid descent of the charges and, consequently, a large production. The inclination depends chiefly upon the nature of the materials worked. With ores easily reduced and readily melted, the boshes and hearth may be suppressed by directly uniting the upper part of the boshes with the bottom by a straight line or a slight curve. The rubbing of the materials against the walls will thus be reduced to a minimum, and the conditions will be eminently such that a large quantity of iron will be produced.

5. In the greater number of cases the most advantageous width which should be given to the upper part of the boshes is from 16 to 18 feet. Thus constructed, the yield of the furnaces per cubic foot of capacity is as great as that of the older apparatus which were not as wide. We have determined as a maximum a diameter of 19 feet for the treatment of ores of average fusibility and composition. It is true that when the width increases beyond the limit given, an increased production may be obtained (provided the blowing engine can furnish a quantity of blast in proportion to the increase of volume) but the production per cubic foot rapidly diminishes as the boshes grow larger. A furnace the width of which had been exaggerated, could only be made to produce a quantity of pig equal to that made in a furnace of the dimensions indicated, at a sacrifice of fuel. This result is due in a great measure to the fact that in furnaces of very great width, the distribution of the gaseous current is very irregular, a circumstance which requires slower driving or a greater consumption of fuel. By extending the width of the upper bosh in the shape of a cylinder for a certain hight, the velocity of the ascending gases and the rate of descent of the stock is diminished, which has the advantage of economizing fuel, and consequently improving the quality of the pig.

6. With the same object in view, it is good also to give the top a greater diameter, without allowing it to go beyond 13 feet, or two-thirds of the diameter of the upper boshes when the latter reaches 19 feet, the largest admitted.

Whatever may be the diameter of the upper boshes, we advise not to give the top a diameter greater than two-thirds of that of the boshes. It is necessary to give the walls of the shaft a certain inclination, in order to diminish the friction of the stock against the refractory lining, and to thus facilitate its descent.

As the enlargement of the top increases the density of the central part of the charge, which is always traversed by the gases to a less extent than the exterior annular space, it will be necessary, if the tunnel head is 11 to 12 feet wide, to carry off the gases from the center, and to adopt a mode of charging which tends to bring the larger pieces to the middle, and thus to render the passage of the gases through the central part of the column of charge easier. It is only by meeting both of these requirements, and by rejecting any system by which the gas is carried off from the side walls, that, with ores reduced with difficulty, wide tops will favorably influence the working of the blast furnace.

The study of the influence of heating the blast on the working of blast furnaces, leads Mr. J. Wolters to the following conclusions:

1. Heating the blast is a really practical means to economize fuel and augment the daily production. But, on the one hand, economy of fuel diminishes as the temperature of the blast is increased; and on the other hand, there is, for every particular furnace, a limit of temperature beyond which an increase would not lead to an augmentation of production.

2. For the same production the nozzles must be wider in proportion to the degree of heat. In this manner too high pressures of the blast are avoided which seriously injure the working of the furnace, and which, besides, can only be obtained by an extra demand upon the blowing engines.

3. Experience has proved that, in general, heating the air has had an injurious action upon the quality of the iron, and that the degree of deterioration depends entirely upon the materials treated. Heated air has only exceptionally improved mill iron by rendering it lower in sulphur. When middling ores are to be smelted for mill iron, and when, therefore, an increase of injurious substances influences the commercial value of the iron but little, the most economical mode of working will in general be to employ highly heated blast.

4. For the same quality of pig iron, the blast may be heated to a more elevated temperature if the ore is low in silica and high in iron. With equal amounts of silica, ores holding a certain amount of lime will permit the employment of a higher temperature than ore which contains none or a smaller amount only.

5. The injurious influence of hot blast may be counteracted by an increased charge of limestone. But this remedy is not sufficient, because, in opposing the reduction of silica by a more calcareous slag, the reduction of alumina and other earthy bases of charge is favored at the same time.

6. Whenever the aim is to obtain products of superior quality, the use of the hot blast should either be abandoned or blast heated to a slight temperature only be used.

The mode of charging and of taking the gases have a very decided influence upon the working of furnaces.

1. The materials must be charged in distinct layers. Thus too rapid an advance of the ore before the fuel during the descent is prevented in the upper regions; but, on the other hand, this mode of descent mixes all the materials in the lower part of the furnace. They arrive in the zone of fusion intimately mixed.

2. In order to derange as little as possible the regularity of the temperature of the furnace, the fuel must be charged by volume and the ore by weight.

3. The mode of charging to be adopted in every particular case depends entirely upon the size and the ease with which the ore is reduced. It should make the central column easily traversed by the gases, although this entails the danger of falling into the opposite error, which would lead to the same disadvantages that too dense a central column causes.

4. Experience, above all, must teach the size of the charges. It is necessary that they should cover the entire surface of the top, and that they should not be too thin, because that would lead to the disadvantage of a mixture of all the materials thrown into the furnace. In general, it may be stated that the thickness of the charges must vary with the diameter of the top, the mode of charging, and even with the nature of the ore and fuel used.

5. The workmen must be particularly careful in charging the furnace, and must not neglect any precaution which may tend to insure continuity and regularity of work, upon which, more than is believed, the rapid and economical working of furnaces depends.

6. It is indispensable, whenever the diameter of the top is very large, or whenever it is of average width but the ore is difficult to reduce, to take the gases from the center. This leads to an increase of production, an

economy in fuel, and an improved quality of iron.

7. Whenever the diameter of the tunnel-head approaches the average size and the ore is easily reduced, the gases may be taken from the circumference without injuriously affecting the working of the furnace.

8. The consumption of fuel being the same, the product made will be higher in carbon and lower in silicon, the more completely the central parts of the charge have been traversed by the gas. Of course, the formation of a kind of central chimney must be avoided, because that would bring about too rapid a combustion of carbon, and in consequence of too high a temperature in the upper regions of the furnace, silicates of iron would be produced, which, being partly reduced by contact with incandescent fuel, would yield siliceous pig.

9. Whenever the gases are taken both from the center and from the circumference, in order to obtain a large quantity, both these conduits should be entirely independent of one another; they must not empty into a common receptacle or collecting pipe.

10. With an open top, the aspiration of the gases through the grates must be strong enough to overcome the resistance which they encounter on their way between their passage from the furnace to the time they enter the fire-place. Instead of permitting a slight pressure (0.8 to 1.2 inches of water) at the opening of the gas downcomer, a certain degree of suction may be established, taking great care, however, to avoid an entrance of air, which might occasion explosions.

11. Although it has not been decisively proven that with a completely closed top the slightest excess of pressure occasions a less favorable working, we nevertheless consider ourselves justified in recommending large pipes for carrying the gas, and a good draft by means of a chimney, if it were only to diminish the resistance which these gases encounter during their passage, and to facilitate their entrance into the fire-places.

The following is the summary of Mr. Wolter's essay on the influence of the management proper upon the working of blast furnaces:

1. In order to arrive at economical working, as well in regard to production as in regard to the consumption of fuel and the quality of the pig, it is necessary to avoid as much as possible all causes which might injuriously affect the regularity of the working. It is, therefore, above all necessary that those who manage a blast furnace have a perfect knowledge of the raw materials treated, and that they possess, besides, the necessary theoretical knowledge to account for all reactions which take place in a blast furnace.

2. One of the first conditions to be fulfilled in order to reach a regular working, is to maintain constantly an equilibrium between the production and the consumption of heat. As soon as a furnace absorbs more heat than it receives, it undergoes a more or less dangerous chilling, which may disturb the regular work of the apparatus.

3. Working with too heavy a burden is only applicable with very pure, very fusible ores, smelted with charcoal. The product is of first-class quality, but the loss of iron by the cinder is very heavy, diminishing by so much the daily production.

4. When ores are used which present certain difficulties, as, for instance, mill cinder, oolithic, rich, or powdery ores, &c., the blast furnace manager must be all the more careful the greater the difficulties of working them become.

The nature and the mass of slag per ton of pig made, has a preponderating influence upon the amount of mill cinder which the burden will carry. But, until now, no means has been discovered of making mill cinder enter into the manufacture of first-class pig. The products made always hold a large quantity of silicon and phosphorus.

When siliceous ores, mill cinder, ores containing silicates, and, in general, such materials are to be treated which smelt easily, but are reduced with difficulty, care must be taken that the temperature of fusion is not increased. This is the reason why such materials must be worked in furnaces the shaft of which, though not excessively large, must, nevertheless, be well developed. This is attained by giving the top a good width, and by sufficiently lowering the boshes. It is necessary, besides, to take the gases from the center, to charge toward the middle, to blow in the blast at a moderate pressure, to use pretty large charges and to employ fuel in small pieces, &c.

The ores should also be reduced to smaller size as the difficulty of their reduction increases, but the breaking should be limited as soon as there is danger of grinding too fine. The pig must always be accompanied by slag, at least to the amount of 80 per cent. of its own weight.

5. As the introduction of water into the hearth is injurious to the working of the furnace, the tuyeres must be inspected regularly after every casting, and be immediately replaced as soon as they show the slightest flaw or escape of water. They must be carefully kept, and be supplied with a sufficient quantity of water.

As bronze or sheet copper tuyeres are by far superior to cast or wrought iron ones, the former are now universally used. By suppressing frequent changes and diminishing the chances of the introduction of water into the hearth, they have contributed to an augmentation of the production of blast furnaces. The center line of the tuyeres must always be kept in a proper direction.

6. The slag, while it must retain a sufficiently powerful purifying action, must, nevertheless, be so composed that it is perfectly fusible at the temperature of the blast furnace. It is indispensable, therefore, that the relative proportions of the different substances composing the charge be determined by chemical analysis.

7. Too great or too feeble a pressure of blast, as well as too large or too small a body of air, may lead to very serious consequences. In general, the pressure of the blast must vary with the hight of the furnace and the diameter of the hearth, as well as with the nature of the ore and the fuel used. The weight of the blast supplied must vary principally with the interior capacity of the furnace.

8. The quality of the coke has a very strong influence upon the production of furnaces and the regularity of their working. The furnace manager should exercise the greatest care in the choice of the coal used for the manufacture of the coke, an operation which, besides, must be very attentively watched.

9. All irregularities in the working very sensibly affect not alone the production, but they alter the quality of the pig also, and increase the consumption of fuel.

10. When a derangement of any kind has occurred, the aim should be, above all, to remove the cause which has produced it, and to arrange the furnace in such a manner that the damage which the accident has brought about is made to disappear as quickly as possible.

11. As soon as the furnaces reach a sufficient hight, the advantages obtained by the use of burnt lime become too insignificant to warrant a serious recommendation of its employment as a flux.

12. The flame at the top, the aspect of the tuyeres and the nature of the cinder, serve as the best practical indicators for a knowledge of the working of the furnace.

Scientific and Technical Notes.

Glaser's Annalen contains a description of an improved method and apparatus for the

MANUFACTURE OF ARTIFICIAL SANDSTONE.

A thorough mixture of 4 to 6 parts of fine sand and 1 part of slaked lime is exposed for about three days to a high temperature and a pressure of more than three atmospheres, causing the formation of a silicate of lime which acts as a cement, so that the mass, when cooled down to the ordinary temperature, hardens. This hardening process continues for some weeks by exposure to the air, so that finally a product is obtained which is as hard and solid as good sandstone. The apparatus consists of a tank, into which the mixture is filled, and in which it is heated and stirred by a steam pipe, provided with a number of arms and rotated by belting or gearing. After the mixture has reached the proper temperature the steam is cut off, and a second vessel, inclosing the tank on all sides, is put into communication with the boiler. By this means the mass is heated for the period necessary. It is then run into a brick machine and shaped into the forms required. The process, it is claimed, effects great economy, especially for the manufacture of window sills, &c. The apparatus used is made large enough to produce 250 cubic feet of material in every charge—requiring, generally, three to four days.

The *Engineer*, in a recent number, illustrates a simple

APPARATUS FOR HEATING FEED-WATER

with exhaust steam, used by Messrs. Deakin, Parker & Co. of Salford. The exhaust steam is allowed to pass into a tubular chamber made of large pipe. Into this chamber is conducted the feed-water pipe, passing and repassing through the greater part of its length, being heated by the exhaust steam on the way.

M. Moissan has described before the French Academy a simple

METHOD FOR PRODUCING METALLIC CHROMIUM.

He agitates a concentrated solution of chloride of chromium with sodium amalgam, by which operation an amalgam of chromium is produced. This is boiled in water to remove the soda, and then distilled by heating in a current of hydrogen at about 150 degrees. The chromium thus obtained is a black, slightly coherent powder.

At a recent meeting of the North British Association of Gas Managers, Mr. D. Bruce Peebles, of Edinburgh, exhibited a

NEW GAS LIGHT GOVERNOR

for controlling the consumption at a single burner. It consists of a hollow flanged cone, resting on a needle-pointed stud, and working in a cylinder to which the flange of the cone is accurately fitted. The needle point is set exactly under the valve seat, and keeps the apex of the cone always in position, so that the valve cannot, by any means, get out of its proper place; while, at the same time, the greatest freedom of action is allowed to the cone. As soon as the stop-cock is opened, the gas fills the interior of the cone and momentarily closes the valve; but, finding its way by a vertical passage or through a hole in the cone, it reaches the chamber above the cone. The cone is, therefore, now surrounded by gas of the same pressure, and, having nothing to support it, falls and lets gas pass to the burner. But this only takes place to an extent that allows a differential pressure to be established sufficient to support the cone, which is then equilibrated between two pressures, and the difference between these two pressures remains constant, however much the initial pressure of the gas may vary, unless, of course, it gets so low as not to be able to raise the cone. It follows, therefore, that a constant flow of gas will be maintained under varying pressures, and, even if larger burners are used, no more gas will be allowed to pass than what the governor has been adjusted to deliver.

An American gentleman now living in Spain, points out to his countrymen that it is an inviting field for the sale of labor-saving implements and the procuring of patents. The Spanish farmers use precisely the same sort of plows as the Moors did when Isabella exiled them. Sowing and reaping machines are not known, and the grain is not thrashed, but the oxen tread it out, as they did in the days of Moses. It is winnowed by women, who toss it into the air to scatter the chaff. In many parts of Spain wine is thrown away because there are no vats to keep it in, and but few purchasers. In Upper Arragon, masons wet their mortar with wine instead of water, because there is a scarcity of water. The thousand and one conveniences of domestic work in America are unknown in Spain. The writer assures his readers that any new and practical invention will find a ready sale in Spain, especially such as requires but a small capital.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, April 24, 1879.

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CONTENTS.

Messrs. Dun, Barlow & Co. send us a statement of the failures in the United States for the quarter ended with March, as compared with the corresponding quarters of the two preceding years, which makes the following showing:

Quarter Ending March 31, 1879.

States and Territories.	Number of Failures.	Amount of Liabilities.
Eastern States	343	$6,840,842
Middle States	831	14,314,647
Southern States	495	8,727,908
Western States	648	8,380,221
Pacific States and Territories	207	4,859,047
Total	2,524	$43,112,665
Dominion of Canada	634	$11,648,697

Quarter Ending March 31, 1878.

Eastern States	539	$11,016,974
Middle States	950	32,274,606
Southern States	483	11,699,029
Western States	1,218	25,014,081
Pacific States and Territories	165	2,074,136
Total	3,355	$82,078,826
Dominion of Canada	555	$9,100,909

Quarter Ending March 31, 1877.

Eastern States	415	$6,798,408
Middle States	918	23,308,354
Southern States	384	6,666,391
Western States	969	13,545,398
Pacific States and Territories	180	2,219,519
Total	2,869	$54,538,070
Dominion of Canada	372	$7,576,511

The above figures indicate a decrease in failures of 831 in number during the quarter, or a falling off of 25 per cent. as compared with the corresponding quarter of last year. In the amount of liabilities, however, a much greater reduction is shown; the failures for the last three months being only slightly in excess of one-half the amount of those for a similar period of 1878, and considerably less than those for 1877.

Condition of the Blast Furnaces of the United States, April 1st, 1879.

Our regular quarterly report of the condition of the blast furnaces of the United States, which we print on the next page, is of more than usual importance, as showing the effect upon the blast-furnace industry of the improvement in the rolled iron trade in the East. In order to avoid any misunderstanding and to point out exactly the scope of the table, the following explanations are given:

1. The divisions of localities are geographical for the most part, and are not made with reference to the points from which furnace supplies are drawn. 2. The columns "in blast" and "out of blast" only show the stacks from which we have reports, and their footings will not equal the footings of the column of total number. 3. We have included some furnaces that are rebuilding and not yet completed and others that are building, and in one or two cases some furnaces that have been reported abandoned, since their owners do not report them. In other cases we have stricken from our list furnaces that are generally included in such lists, as we are assured that they are permanently out. 4. The column of capacity per week is much in excess of what the regular working of the furnace will show—stoppages, slow working and various other causes which will readily occur to those interested, combining to reduce the make below the furnace capacity.

The table, in a condensed form, makes the following showing:

	In Blast. April 1, 1879.	Out of Blast. April 1, 1879.
Charcoal	68	191
Anthracite	89	137
Bituminous	84	135
Total	241	463

Referring to the past two years, we have the following comparisons:

FURNACES IN BLAST APRIL 1,

	1877.	1878.	1879.
Charcoal	57	60	68
Anthracite	82	97	89
Bituminous	79	95	84
Total	238	252	241

FURNACES OUT OF BLAST APRIL 1,

	1877.	1878.	1879.
Charcoal	220	207	191
Anthracite	142	129	137
Bituminous	126	122	135
Total	488	458	463

It will be noticed that the figures for the past two years show but little change; 65.7 per cent. were out of blast in 1879, and but about 1 per cent. less in 1878, or 64.5 per cent.

We imagine that the condition of the anthracite furnaces, as compared with their condition Jan. 1, will be a surprise to many of our readers who have not kept a close watch of the blowing in and blowing out of furnaces. The general impression is that there are more anthracite furnaces in blast at the present time than at the beginning of the year. The fact is there are less. On the 1st of January, 1879, there were 96 anthracite furnaces in blast; April 1, 1879, the number was 89. The falling off, however, has been in the Hudson River region. There has been a slight increase in the Lehigh region.

The quarterly reports which we have given of the Lehigh region for the past two years, are especially interesting at this time. Beginning with Jan. 1, 1877, we find the condition of the furnaces in the Lehigh at the beginning of each quarter as follows:

	In blast.	Out of blast.
Jan. 1, 1877	23	26
April 1, 1877	22	28
July 1, 1877	26	24
Oct. 1, 1877	29	21
Jan. 1, 1878	35	15
April 1, 1878	32	18
July 1, 1878	32	18
Oct. 1, 1878	28	22
Jan. 1, 1879	26	24
April 1, 1879	29	21

The outlook in the anthracite region is that the furnaces will be well employed. We question if a furnace that is in condition to run will be idle this summer, especially in the Lehigh and Schuylkill regions.

The Prospects of Industrial Development in Canada.

The *Maritime Journal*, of Halifax, replying to our comments on its second invitation to American manufacturers to establish branch works in the Dominion, says:

We are perfectly content that the manufacturing capitalists of the United States should look well before they fix plant in this Dominion, but the point we make in favor of a prompt decision should not be lost sight of. The protection of the new tariff is ample for any concern that has the power of reproducing, at cost of labor and material, the special machinery which gives it a position in American manufacturers' ranks. The immediate introduction of such duplicate machinery will give a command of the trade that no succeeding rival, whether of native or foreign origin, will be able to affect without the invention of superior facilities. The manufacturer who to-day sells from the United States against his neighbor and equal in rank and advantages, will by the naturalization of his product have an advantage of the entire duty, and in all the articles made by the great manufacturers whom we invited, the market of Canada is large enough to keep a concern in active employment on a big enough scale to yield good returns.

The difficulty is that American manufacturers do not, as a class, believe that the Dominion is yet in a position to sustain a great manufacturing system, and that its markets are not large enough to justify special investments to supply them. They expect to hold a good share of their Canadian trade as it is, and are not yet inclined to credit the prediction of a great industrial development there. The comparatively small population of the Dominion is scattered over too much new territory to make protection of much value as yet; and the permanence of the tariff is not so well assured that it can be depended on as an assistance to local industrial enterprise. As we have said before, there are many things in American experience of the advantages of protection which cannot be expected to follow the adoption of such a policy by Canada. Establishing branch manufactures in another country is not something which can be undertaken as an experiment until the prospect of success is reasonably well assured. There is nothing in the outlook for Canadian trade in the near future which seems to warrant such a venture, and we think that a majority of our manufacturers would rather wait and see whether, in this case, the duties imposd upon American goods will be paid by the makers or the consumers. In the United States the competition of domestic producers has resulted in such a cheapening of prices as to throw the burden of duties on foreign producers; but in Canada it is by no means certain that a like development and diversification of domestic industry will follow the experiment of protection, or that the competition of domestic with foreign products will be so sharp as to make domestic goods the cheaper to consumers. In the case of Canada, a much safer and more judicious policy would have been the imposition of such protective duties as would have tended to develop the industries already established there, and for which that country has natural advantages. This would have been attended with immediate and permanent benefit; but the attempt of the new government to force a general industrial development for which the country is not yet ready, is more likely to disappoint than to benefit the Canadian people for some years to come.

Two Important Meetings.

During the first half of May, two meetings of more than ordinary interest and importance to the iron and allied industries of the United States, will be held in Pittsburgh. The first of these in the order of date is the mass-meeting of iron and steel manufacturers and ore producers, called by the American Iron and Steel Association, to be held May 6 at the rooms of the Western Iron and Nail Associations. The call of the Iron and Steel Association is urgent and should be heeded. While no important changes in the conditions affecting the iron and steel trades are imminent, it is important at this time that these trades should give expression to their views on several subjects. Considering the present composition of the popular branch of Congress and of its most important committee, it is more than probable that legislation hostile to the manufacturing interests of the country will soon be attempted. It is said that every member of the newly reorganized Ways and Means Committee, is panting for a chance to distinguish himself by something bold and striking in the way of tariff tinkering, and the probabilities are that a sub-committee to prepare a revision of the tariff for presentation to Congress in December, will be appointed to sit during the summer recess. It would be natural to suppose, in view of the unpopularity of such an agitation, that shrewd politicians would be careful to avoid raising it on the eve of a Presidential canvass, in which the issue is, at best, doubtful. But even shrewd politicans often mistake the drift of popular sentiment on great questions, and are very apt to be misled, by the absence of agitation, into believing that popular silence means popular indifference. Mr. Wood made this mistake last year, and the sudden burst of indignation which greeted his foolish scheme of a revenue tariff, probably astonished him at the time, though it does not seem to have made any permanent impression upon him. It is of the utmost importance, therefore, that a great industry with many branches, like that represented by the American Iron and Steel Association, and one which is peculiarly sensitive just now to the influence of hostile legislation, should give prompt and vigorous expression to its views on questions about to engage the attention of Congress. This is one of several important objects which the managers of the association have in view in calling the Pittsburgh meeting, and as its action will no doubt be watched carefully by those who are anxious to find warrant for the assertion that the iron and steel trades of the country no longer need or care for the advantages which the tariff gives them, it is desirable that a large attendance and harmonious action should give proof to the contrary. Arrangements have been made with the Pennsylvania Railroad Company, by which those wishing to attend this meeting will be given special excursion rates over the main line and its connections, extending from Baltimore on the south to Boston on the east. Gentlemen desiring to avail themselves of the low rates of fare established for this occasion, can do so by addressing Mr. James M. Swank, Secretary of the American Iron and Steel Association, 265 South Fourth street, Philadelphia, and obtaining from him orders for excursion tickets. Agents at the company's offices are instructed not to sell special tickets except on presentation of these orders.

On the 13th of May, the session of the American Institute of Mining Engineers begins in Pittsburgh. Those coming from a distance who can spare the time, will find pleasure and profit in attending both these meetings; and for this reason it is to be regretted that they could not have been arranged to occur a little nearer together. However, Pittsburgh is full of interest for visitors connected with the metallurgical or mining professions, and for those who can spare a week we know of no place where it could be more pleasantly or profitably spent. The chief interest of the Institute meeting, as regards its scientific features, will probably center on the continued discussion of Dr. Dudley's paper on the relation in steel rails of chemical composition to physical properties. Dr. Dudley's careful investigations, and the boldly original deductions he has drawn from them, are calculated to result in great benefit to the steel trade of the country, by calling attention to phenomena which merit more careful study than they have yet received. Whether his generalizations will stand the test of such scrutiny as the makers of steel rails have given them during the past nine months, it would scarcely be safe to say until we shall have heard what will be brought forward at the May meeting of the Institute, in answer to his paper read at Lake George and his very able remarks at Baltimore. In other respects it is probable the scientific interest of the meeting will be secondary to the social features and the many and interesting excursions which, we understand, have been arranged to the points of interest in and about the city. It will, however, be a memorable meeting, and those who fail to enjoy the large hospitality which the iron and steel manufacturers and citizens of Pittsburgh will undoubtedly extend to the institute—all the more hearty to compensate for the lack of any hospitality on the part of the citizens of Baltimore last winter—will lose something which those who enjoy it will long have occasion to remember with pleasure.

Proposed State Legislation Concerning Bankruptcy.

The New York Legislature has under consideration a bill for the regulation of proceedings in bankruptcy, which seems to meet the approval of a large and influential class of business men. Since the repeal of the national bankruptcy law, the merchants and manufacturers of, or doing business in, New York have experienced much inconvenience from the unsatisfactory character of the old State insolvency law, and in the light of experience they are seeking to have it so changed or amended that the collection of claims against bankrupt estates will be made easier, and the inducements now offered to dishonest insolvency rendered less tempting. One of the best points of the new law is that it deprives the bankrupt of the right he now enjoys of preferring particular creditors. Those who favor such a change in the law argue with much force that a bankrupt's assets do not belong to him, but to his creditors, and to all of them equally. They say that the provision of the present law allowing a bankrupt to consider certain claims against his estate as preferred claims, has been made a cloak for a great deal of dishonesty. By skillfully manipulating his affairs, the fraudulent bankrupt has been able to swell the sum of his preferred debts to such an amount as to leave nothing for those whose merchandise he has taken without paying for it. The opponents of the bill, on the other hand, claim that the preferred-creditor provision of the present law is one of its best features. It encourages men of capital to make advances to their friends which they would not make unless their claims were allowed to take precedence of ordinary mercantile debts. They insist that this ability on the part of the debtor to secure those who may lend him money, has saved thousands from bankruptcy who, but for timely aid which could have been secured on no other basis than that of the preferred-creditor clause of the State insolvency law, must have failed. On this supposition they argue that the creditor classes have gained from the operation of the preferred-creditor clause vastly more than they have lost, since it has tended to reduce the number of bankrupts. As between these two views of the case, we incline to that held by the advocates of the bill. We fail to see that a man who is in an insolvent condition, has any right even to tide over his affairs by making with new creditors an agreement to the prejudice of the interests of old ones, or assuming obligations to one class of creditors which imperil the security of other classes. It is also easy to see how such a privilege can be abused, and how, under the cover it affords for fraud, a dishonest bankrupt can keep enough of his capital "in the family" to start in business again as soon as he has secured a release. Since the national bankrupt law was repealed, the number of assignments in which preferences have been made that have absorbed all the assets, has been suspiciously large. There can be no doubt that many of these preferred claims are manufactured out of whole cloth, with the connivance of accommodating relatives and friends.

When the business community are practically unanimous in expressing the opinion that a mercantile debt is worthless as soon as the debtor expresses his inability or unwillingness to pay it, no other evidence is needed to convince thinking men that there is something wrong with the law which has for its ostensible object the protection of the rights of creditors. There is too much reason to believe that the interests of debtors receive more consideration at the hands of our State legislatures than do those of creditors. Perhaps a reason for this is found in the fact that a majority of the gentlemen who secure the popular suffrage for this office have always belonged to the debtor class, and are consequently more in sympathy with it than with the creditor class, commonly supposed to be largely made up of "grasping capitalists," who long for the poor man's dollar as Ahab longed for Naboth's little vineyard. There is something ominous in the name "creditor class," which naturally puts the bucolic legislator, fresh from the mortgaged hay-mow or the encumbered cheese-press, on his guard. His suspicions are shared by the statesmen who, in civil life, have learned something about the burdens of mercantile indebtedness in their efforts to get gain keeping gin mills. Against such an alliance—strong numerically if not intellectually—the business men who accidentally find themselves in the legislature have comparatively small chance of a favorable hearing. In the eyes of their colleagues they represent the terrible "creditor class," and are thus properly objects of distrust. Any measures they introduce or advocate must accordingly be watched carefully. The eyes of the "debtor class"—how pathetic the very name—are upon them. Not long hence they must give an account of their stewardship to their constituents, and how should they explain to these poor people an "aye" vote on a bill which gives the merciless creditor a double hitch on the miserable debtor's cravat? Perhaps this is a little exaggerated; but, jesting aside, any bill which aims to protect the interests of the creditor and place obstacles in the way of fraudulent bankruptcy, is certain to encounter vigorous opposition. That a good bankrupt law is as much to the interest of debtors as of creditors, all who stand in either position will admit. The bill now under consideration in the New York Legislature is approved by our best class of business men. It is as nearly fair as such a law can be made, and we hope that all our readers in this State will—if, after a careful study of its provisions, they approve them—do what they can to secure its passage.

Our Trade With Venezuela.

Venezuela is one of the most favored countries of South America, and since the beginning of this century the United States have at all times done a considerable business with it. This trade has of late years become very important, and the uninterrupted prosperity of the republic is to us a matter of no small interest. The country was discovered by Columbus in 1498, but no settlement was attempted until the ensuing year, when the Spaniards landed at Coro, a port then built on piles like Venice. They therefore called it Little Venice, or Venezuela, which has since become the name of the entire region. After several fruitless attempts to colonize it, the Spanish government disposed of the partially subdued natives to the Weltsers, a German company of merchants. Their mismanagement led to a change in 1550, when Venezuela became a supreme government under a captain general. Spain remained in peaceful possession of the country until 1806, when the first attempt at revolution was made.

In 1822 the Colombian Republic, which Venezuela had joined while struggling for independence, was dissolved, and in 1864 the present federal form was adopted. Revolutions have been frequent in the republic, a fresh one having broken out quite recently. The late president, General F. L. Alcantara, whose term expired February 20 1879, died a couple of months ago, and the succession at once became the subject of civil strife. Fortunately the people of Venezuela are getting tired of revolutions, and the public voice loudly called for a prompt pacification. In order to attain this desideratum without bloodshed, ex-president Guzman Blanco, at the time living at Paris, was called back, he being the most popular, and in every respect the best man available. He returned, and has assumed without opposition a temporary dictatorship.

The resources of Venezuela are mainfold. There are rich gold mines, and copper is also found in considerable quantities. The great staple articles of Venezuela is coffee, of excellent quality, and the finest cocoa. Hides and indigo, as well as fustic, less important at present than they were some 20 years since, still count among the leading exports. The republic includes a magnificent mountain plateau and immense plains, the so-called "Llanos," being watered toward the South by the Orinoco, after the Amazon the largest river of the southern continent. Every product of the soil in-

digenous to tropical America is produced in Venezuela, and some are peculiar to the region through which the above rivers flow, such as tonqua beans and balsam copaiva.

Possessing an enviable geographical position and tolerably good ports, it was to be expected that Venezuela would become one of the most prosperous countries in South America. Its well-wishers have been disappointed, however, for it has progressed very slowly, in consequence of the almost constant disturbance of public affairs. The constitution of May 27, 1874, has limited the presidential term to two years—a circumstance which only tends to multiply the chances of revolution.

There are twenty states and four territories, including the federal district, covering jointly an area of 432,294 square miles, with a population of 1,784,197, including 24,000 foreigners.

The principal cities are: Caracas, 48,897 inhabitants; Valencia, 28,594; Barquisimento, 25,664; Maracaybo, 21,954; Maturin, 12,944; San Carlos, 10,420; Merida, 9727; Cumana, 9427; Ciudad Bolivar, 8486; Coro, 8172; Barcelona, 7674, and La Guayra, 6763. Caracas, the federal capital, was destroyed by an earthquake in 1812, but was promptly rebuilt. The revenue from duties in 1874–1875 was $6,702,080, and the expenditure, $6,143,134. The public debt amounted, at the end of 1876, to $16,178,609 internal, and $50,574,079 foreign; together, $66,752,688. In 1875, after a suspension of many years, the payment of interest was temporarily resumed.

The entire trade movement during the fiscal year 1875–1876 amounted to about $31,000,000, the import having been $15,043,373, and the export, $16,112,627. The foreign trade of Venezuela in 1875–1876, is shown below in thousands of dollars:

	Import.	Export.
Germany	2,209	5,030
England	4,289	591
France	2,460	2,056
United States	2,588	4,846
Spain	571	443
Dutch colonies	638	170
British "	1,208	1,451
Other countries	1,080	626
Total	15,043	16,113

Produce Exported.

Coffee	11,410	Dye woods	169
Cocoa	1,502	Specie, &c.	1,350
Cotton	548	Other goods	479
Goat and deer skins	466	Total	16,113
Hides	189		

There were imported in 1874–75 from Germany, $1,541,000 worth of goods; from the United States, $2,657,000; France, $1,817,000, and from England, $2,514,000, while the export was as follows: To Germany, $5,450,000; to the United States, $3,799,000; to France, $2,598,000; to England, $291,000. The leading articles of export in 1874–1875 were coffee, 35,721 tons, and cocoa, 4,329 tons, the balance being made up of cotton, sugar, indigo, tobacco, dye woods, hides and skins.

There are open for general trade the ports of La Guayra, Porto Cabello and Ciudad Bolivar (formerly Angostura); the latter two are also ports for transit goods intended for the United States of Colombia (laws of May, 25, 1867, and March 16, 1875). The bulk of Venezuelan commerce is in the hands of foreigners, chiefly Americans, Germans, Italians and Spaniards.

There entered the port of La Guayra in 1874–1875, 175 vessels, with a joint tonnage of 148,360, and at Porto Cabello 256 vessels, with 126,260 tons. In 1874 there arrived in the various ports of Venezuela 2,200 vessels.

Venezuela has been slow in introducing railroads. The line from Tucacas to the Aroa mines was thrown open to public traffic February 7, 1877. It is 70 miles in length. The line between La Guayra and Caracas was begun in 1876. There are five European steamship lines, all touching regularly at Venezuelan ports. A very large trade is carried on between the neighboring Dutch island of Curazoa and the northwestern coast, and between the British island of Trinidad and the Orinoco River, mostly through the Macareo, a branch of the great river, being a sort of short cut in the delta. Steam navigation thus shortens the distance between Trinidad and Ciudad Bolivar considerably.

There is scarcely an important point north of Venezuela where a profitable trade may be carried on that Great Britain has not a commercial post and a colony to take care of it. We need but point to the many British Windward Islands, of which Trinidad is the southernmost and largest, Jamaica, the Bahama Islands and British Honduras.

American steamship lines have been started in the Venezuelan trade, touching at St. Thomas, over and over again, both from New York and neighboring ports, but they have at no time proved a lasting success—whether from general causes or bad management, it is not easy to determine. The difficulty seems to be the uncertainty of sufficient home freight; not so much in the winter time and in the spring, when the coffee is shipped this way in large quantities from La Guayra and Porto Cabello, as during the remainder of the year. Twenty or thirty years ago we received large amounts of hides from all Venezuelan ports, but cattle raising has declined in the republic to such an extent, by reason of frequent civil wars in the interior, that this great trade has dwindled down to a mere trifle. The European steamers, on the other hand, take indiscriminately cargoes for England, France and Germany, and complete them in the West Indies, thus securing profitable return freights.

Our trade with Venezuela during the past three fiscal years has been as follows:

Fiscal year.	Import.	Domestic export.	Foreign export.	Total Trade.
1876	5,875,715	3,424,278	57,299	9,357,292
1877	7,000,801	2,775,149	60,552	9,836,502
1878	7,444,431	2,969,025	71,370	10,484,826

The following statistics show the rank which Venezuela occupies in our trade with the various countries in tropical America, taking the last fiscal year for a basis and reducing everything to thousands of dollars:

	—Export— Domes.	For.	Total.	Import.	Total Trade.
Argen. Repub.	2,014	139	2,153	4,949	7,102
Brazil	8,611	76	8,687	42,972	51,659
Cen. America	1,480	156	1,636	3,070	4,706
Chili	1,977	13	1,990	670	2,660
Danish W. I.	739	8	747	812	1,559
French W. I. and Guiana	1,570	21	1,591	2.881	4,472
Brit. W. I. and Honduras	7,400	226	7,626	5,833	13,459
British Guiana	1,925	51	1,976	2,141	4,117
Hayti	4,173	61	4.234	3,600	7,834
Mexico	5,844	1,649	7,493	13.646	21,139
Dutch W. I. & Guiana	686	4	690	660	1,350
Peru	981	30	1,011	2,078	3,089
San Domingo	63	28	662	575	1,237
Cuba	11,305	1,797	13,162	58,885	72,047
Porto Rico	1,505	57	1,562	5,047	6,609
Colombia	4,552	133	4,685	6,504	11.189
Uruguay	1,061	32	1,093	2,443	3,536
Venezuela	2,969	71	3,040	7,444	10,484
Total	59,486	4,552	64,038	164,210	228,248

During the fiscal year ended June 30, 1877, there have been shipped from the United States to Venezuela the following articles of domestic production:

Horses	3,800
Agricultural implements	3,876
Beer	8,821
Books	7.952
Manufactures of brass	1,635
Bread and biscuits	16,269
Indian corn	79,478
Cornmeal	1,049
Flour	768,868
Other breadstuffs	22,396
Brooms and brushes	4,444
Candles	21,242
Carriages	40,623
Clocks	3,793
Coal	7,763
Manufactures of copper	147,484
Cordage	46,176
Cotton goods	118,935
Drugs	103,062
Fancy goods	3,327
Fruit	8,930
Glassware	15,778
Jewelry	4,829
Cables	7,527
Manufactures of India Rubber	2,265
Bar iron and castings	5,360
Stoves	4.791
Steam engines	2,088
Boilers	12,990
Machinery	69,743
Nails and spikes	1,407
Hardware	87,632
Edge tools	19,715
Cutlery	1,052
Arms, &c.	5,848
Oakum	1,342
Lamps	9,701
Saddlery, &c.	8,340
Marble	3,605
Matches	2,377
Pianos and organs	7,145
Resin	9,421
Tar	1,334
Petroleum	78,048
Lard oil	1,126
Cartridges	8,805
Paints	8,813
Paintings	4,232
Paper and stationery	25,058
Perfumery	8,315
Plated ware	5,883
Printing presses	7,266
Bacon	39,452
Beef	5,460
Butter	32,756
Cheese	2,078
Fish	12,545
Lard	258,037
Preserved meats	2,493
Oysters	1,381
Pork	3,334
Potatoes	14,201
Other vegetables	1,228
Quicksilver	1,366
Scales	8,084
Sewing machines	38,668
Soap	5,977
Spirits of turpentine	1,206
Refined sugar	76,183
Tallow	197,603
Manufactures of tin	2,679
Leaf tobacco	17,039
Manufactured tobacco	30,786
Trunks	2,219
Varnish	1.168
Watches	1.335
Clothing	2,322
Lumber and timber	61,795
Furniture	54,181
Woolens	1,942
Sundry merchandise	45,065
Total	$2,775,149

It will be seen that the chief articles have been flour, manufactures of copper, cotton goods, drugs, machinery, petroleum, lard, refined sugar, tallow, lumber and furniture. The late revolution having terminated before it could do much harm, and the supreme power now being in safe and strong hands, there is no reason why our business relations with Venezuela should not experience a healthy development, considering the firm foothold we have there and the nearness of the country.

The Tonnage of Great Britain.—The annual statement of the navigation and shipping interests of Great Britain for the year 1878, which has just been issued, is noteworthy in consequence of the renewed proof that it gives that English steam tonnage is gradually driving other carriers to the wall. The export and import trade of the United Kingdom is so general that statistics that are true of it have a relative applicability to other portions of the world, and, therefore, the comparisons made in this volume have a value even to Americans. It is shown in the statement that the tonnage of vessels which were entered from foreign voyages at the custom-houses of the United Kingdom in 1878 was 327,462 tons less than during the previous year, a falling off of about 1 per cent. But during this same period the entries from foreign voyages of English steamers increased by 668,369 tons, showing that the decline was wholly in the line of sailing vessels, both English and foreign. In the clearances of vessels for foreign voyages during 1878, a gain in tonnage of 391,451 tons was made; yet here, too, the increase is all for the English steamers, which report an addition in 1878 of 991,377 tons over their return in 1877, thus showing a constant tendency on their part to take business which was formerly thought to be especially suited to sailing craft. The same conclusion is reached in another way—that is, by taking the shipbuilding reports; for, while in 1878 the aggregate tonnage built was a little less than in 1877, there was in steamships a gain in 1878 of about 25 per cent. as regards the number constructed, and of 30 per cent. as regards their tonnage.

Condition of the Blast Furnaces of the United States, April 1, 1879.

(Compiled for The Iron Age).

Location.	CHARCOAL. Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	ANTHRACITE. Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	BITUMINOUS OR COKE. Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.
New England	17	6	430	11	680	1	....	.....	1	180	....	....	.....	.....	.....
New York	16	5	370	11	629	43	15	3,720	28	6,005	....	....	.....	.....	.....
New Jersey	....	....	.....	.....	.....	16	5	1,270	11	2,650	....	....	.....	.....	.....
Spiegel	....	....	.....	.....	.....	4	....	.....	.....	.....	....	....	.....	.....	.....
Pennsylvania	36	16	721	20	843	....	....	.....	.....	.....	....	....	.....	.....	.....
Lehigh Valley	....	....	.....	.....	.....	50	29	7,654	21	5,090	....	....	.....	.....	.....
Schuylkill Valley	....	....	.....	.....	.....	50	12	2,420	38	6,728	....	....	.....	.....	.....
Upper Susquehanna Valley	....	....	.....	.....	.....	24	10	2,075	14	2,490	....	....	.....	.....	.....
Lower Susquehanna Valley	....	....	.....	.....	.....	37	17	2,665	20	2,495	....	....	.....	.....	.....
Pittsburgh	....	....	.....	.....	.....	....	....	.....	.....	.....	12	9	4,705	3	1,330
Allegheny Valley	....	....	.....	.....	.....	....	....	.....	.....	.....	8	2	180	6	554
Shenango Valley	....	....	.....	.....	.....	....	....	.....	.....	.....	30	8	3,070	22	5,254
Yough'eny Valley	....	....	.....	.....	.....	....	....	.....	.....	.....	5	3	1,140	2	300
Juniata and Conemaugh Valley	....	....	.....	.....	.....	....	....	.....	.....	.....	16	12	2,955	4	530
Maryland	15	2	170	13	746	4	1	150	3	379	5	....	.....	5	570
Virginia	27	4	130	23	1,001	1	....	.....	1	140	5	1	160	4	355
North Carolina	7	....	.....	7	264	....	....	.....	.....	.....	....	....	.....	.....	.....
West Virginia	6	1	100	5	424	....	....	.....	.....	.....	6	4	1,420	2	480
Ohio	....	....	.....	.....	.....	....	....	.....	.....	.....	....	....	.....	.....	.....
Mahoning Valley	....	....	.....	.....	.....	....	....	.....	.....	.....	19	7	2,060	12	2,765
Eastern, Central and Northern	....	....	.....	.....	.....	....	....	.....	.....	.....	21	6	1,685	15	4,210
Hocking Valley	....	....	.....	.....	.....	....	....	.....	.....	.....	13	6	832	7	1,040
Hanging Rock	31	10	840	21	1,699	....	....	.....	.....	.....	17	5	860	12	1,211
Miscellaneous	3	....	.....	3	235	....	....	.....	.....	.....	....	....	.....	.....	.....
Kentucky	....	....	.....	.....	.....	....	....	.....	.....	.....	....	....	.....	.....	.....
Hanging Rock	10	2	210	8	610	....	....	.....	.....	.....	4	2	620	2	550
Western region and Miscellaneous	8	....	.....	8	553	....	....	.....	.....	.....	17	5	860	12	1,211
Tennessee	18	4	435	14	825	....	....	.....	.....	.....	5	2	400	3	1,040
Georgia	8	1	160	7	278	....	....	.....	.....	.....	3	1	288	2	170
Alabama	11	4	530	7	640	....	....	.....	.....	.....	2	1	230	1	230
Indiana	1	....	.....	1	140	....	....	.....	.....	.....	5	1	300	4	540
Illinois	....	....	.....	.....	.....	....	....	.....	.....	.....	12	4	1,796	8	3,280
Michigan	22	9	1,615	13	1,990	....	....	.....	.....	.....	3	....	.....	3	805
Wisconsin	12	3	370	9	1,005	....	....	.....	.....	.....	3	2	700	1	300
Minnesota	1	....	.....	1	.....	....	....	.....	.....	.....	....	....	.....	.....	.....
Missouri	10	1	175	9	1,480	....	....	.....	.....	.....	8	3	1,002	5	2,030
Texas	1	....	.....	.....	.....	....	....	.....	.....	.....	....	....	.....	.....	.....
Utah	3	....	.....	.....	.....	....	....	.....	.....	.....	....	....	.....	.....	.....
Oregon	1	....	.....	.....	.....	....	....	.....	.....	.....	....	....	.....	.....	.....
Total	264	68	6,256	191	14,042	230	89	19,954	137	26,148	219	84	25,263	135	28,755

American Competition with English Manufactures.

The *Ironmonger*, in its issue for April 5th, just received, gives especial attention to the subject of American competition, as felt in the various manufacturing districts of Great Britain, and experienced in foreign markets by the exporters of British manufactures. The facts are so interesting and are stated so fully and fairly, that we make room for such extracts as relate especially to the trades in which our readers are chiefly interested. Let us begin with the following paragraph on the much-vexed lock question:

"American competition in locks is a less prominent theme than it was a little while ago. It is a fact that certain Willenhall lock makers are sending padlocks to the States, notwithstanding the enormous tariff, and the articles are, moreover, made after the American style, with the much-vaunted flat nickel-plated key. There are some makers of door locks who do not despair of getting back some part, at least, of the United States demand, which, prior to the imposition of the excessive tariffs, was greater than that from any other market. At any rate, it seems to be pretty well agreed that so long as the great majority of lock buyers continue to prefer wrought locks to cast ones, Willenhall will be well able to hold her own against the best efforts that her United States rivals are likely to put forth. The American demand for curry-combs, which for three or four years has been virtually *nil*, owing to the high tariff and the large native production, is beginning to revive, and the popularity of English patterns does not, by any means, appear to be annihilated, as was at one time generally feared.

"The French competition in the better class of locks and latches is, on the whole, increasing, and, in the opinion of many, the Willenhall lock maker has far more to fear from France than from America."

In its London trade report the *Ironmonger* gives the following account of American competition in that market:

"There appears to be no diminution of the number of American productions reaching our shores, and scarcely a ship arrives that is not the bearer of some new article, all containing new features of merit, and there are few things manufactured in the States that cannot now be bought in London. Coffin furniture, that specialty of the Birmingham trade, has now been introduced. Messrs. Rogers & Bros., of West Meriden, Conn., and of Southwark street, London, is the firm to whom we are indebted for this new importation; and at the address last named is to be seen, to use an American phrase, a "full line" of these productions. A short time since one of the partners in this firm visited England to introduce their goods. Traveling through the country, from North to South, he found that some of their goods were not adapted to our trade, and that there was a strong objection on the part of our buyers to draw their supplies from so distant a source. Patterns of English goods were, however, obtained, sent over to the works, and new designs to harmonize with our tastes speedily made and shipped to this country, and then it was decided to keep a large stock in London to supply this market. The premises in Southwark street are now stocked from top to bottom, not only with the firm's own manufactures, but with a large assortment of general hardware. Taking the coffin furniture first, the patterns are numerous and of excellent design. The principal point in which they differ with us is in the size of the nameplate, which in America is used much smaller than with ourselves; but this has been remedied, as I before observed, and but little objection can now be taken to anything offered for sale, while Messrs. Rogers & Bros. claim, in common with most American makers, to be lower in price. The bulk of their goods are, however, made of a white metal. This is electro-plate or electro-gilt, and one feature in which they excel us—at least as far as my experience goes—is in electro-brassing the white metal. Shown a set of handles to all appearance brass, I found they were made of the metal I have named; but I believe the error I fell into would have been shared by any brassfounder, as I could trace nothing in the appearance of the goods to show the deception. Burnished all over, exact in color, they were to the eye and touch veritable brass articles, and it is needless to say this plan is carried out to reduce the cost. If English platers can accomplish this process as successfully as our "cousins," it opens a wide field for operation and may completely revolutionize many trades. Messrs. Rogers supplement their own manufactures with an extensive assortment of general hardware, tools, hay and other forks, woodenware, &c., all of which are kept in stock, and excellently arranged, and the firm will no doubt prove keen competitors with the other American houses already established here.

"Another firm, Messrs. Orme & Co., St. Andrew Street, engaged principally in the American machinery trade, are exhibiting some new and valuable labor-saving machines, which have but recently arrived here. One of these is a screwing and tapping machine to work from ⅜ inch to 1⅜ inch. It is made for hand or steam power, though much better adapted for the latter, is very compact, and takes but little space. Another new one is a self-acting planing and shaping machine, also very compact, and of much merit. A third is a stock and felloe boring and making machine for wagon and cart wheels, &c., and for its purpose it appears equally meritorious with the others I have named. Messrs. Orme have also other machinery for carriage and wagon builders, of the labor-saving type—screwing and tapping machines, bench drilling machines, tire-bending machines (all of which appear very moderate in price), and a variety of small domestic articles of the American 'notion' character, for which the firm are well known. They have in addition just completed arrangements with the Tanite Emery Co., of Stroudsburg, Pa., to represent them in London. It would take more space than is at my command to enumerate the various apparatus made, but the company's catalogue contains machines for every description of work, and those already in Messrs. Orme's warehouse are cleanly made and light and well finished in appearance. One in particular I must mention before I close these remarks, viz., Newman's emery planer, for which a number of exclusive advantages are claimed, among them being that it will enable scrap iron to be used instead of the best pig, and the substitution of chilled for the ordinary soft iron. As emery wheels are now being better understood and appreciated in England, our manufacturers must be on the alert. One other class of American manufactures claims notice at my hands. We have hitherto not heard much of American plated-ware, although some has made its appearance in this country. Spoons and forks, however, made on a new principle are now among us. These articles are in the hands of Messrs. Chase & Co., of Upper Thames street. They are made of cast steel finely polished, afterward strongly coated with nickel, and then electro-plated. They are light, yet very strong, and have a good ring with them, and at the price at which they are offered must command a ready sale, while, judging from the manner in which they are prepared, their lasting qualities would appear to be considerable. Messrs. Chase & Co. have just been appointed the agents for a new lamp burner, with an extinguishing and lighting arrangement without removing the glasses."

The Birmingham correspondent says: "American competition in this country is as aggressive and almost as successful as ever in mowers, reapers and implements of various kinds, and above all, hay forks, in which some of our manufacturers frankly acknowledge themselves beaten. American nickel-plated clocks also find a good and growing market here, but in locks and light castings our producers are fast retrieving their position."

Speaking of the Anglo-American struggle for supremacy in the Australian hardware market, the same writer says:

"It must be admitted that the way had been to some extent paved for the Americans by the laxity of our merchants and manufacturers, who, in competing for business with one another, thought they could never cheapen production sufficiently, and had thus gradually been led to flood the market with a very low class of goods. The American manufacturer had, therefore, a comparatively easy task in beating the average run of English goods in quality, and as he economized labor to the fullest extent by the application of machinery to every possible process, and was anxious to 'make a market,' even, if it need be, at some pecuniary sacrifice, there was little fault to find with his prices. His goods were as popular with the dealer or retailer as with the purchaser, owing to the neat, handy and business-like way in which they were wrapped and boxed, so as to cause the minimum trouble to the vender. The Australian merchant firms in Birmingham have done their best from time to time to keep manufacturers acquainted with the progress of the competition, by publishing in the *Ironmonger* and elsewhere extracts from the letters of their correspondents, and lists and details of the American manufactures which were displacing our goods. One merchant firm here, which used to export nothing but English-made hardwares, has for the last year or two been reluctantly compelled to obtain from the United States goods to the value of from £3000 to £4000 per month, all of which were formerly supplied by Birmingham, Wolverhampton, and Sheffield makers. These goods comprise all descriptions of implements, edge-tools, hoes, forks, locks, nails and tacks; boxwood, steel and ivory rules; screws, saws, machine-made clocks and watches, electroplated ware, bellows and anvils, tinned iron spoons and forks, japanned and enameled hollowware, steel pens, &c. Nevertheless, in some branches lost ground is being decidedly recovered. In axes, hoes, and edge-tools of various kinds, our manufacturers have made such strides of late that they are beating their American competitors, not only in Australia, but in various markets of South America, where American tools had secured almost a monopoly of favor. An English adaptation of the American Collins ax, I am assured, is gradually displacing the original, in virtue not only of its cheapness, but of its superior excellence and finish, more especially in the 'eyes.' In the principal Continental markets the competition experienced both from native and American manufacturers is said to be keener than in the colonies."

The *Ironmonger's* Wolverhampton correspondent thinks the prospect is brightening for that district. He says:

"Exporting merchants and manufacturers make less complaint about American and Belgian competition than heretofore. The efforts which British manufacturers are putting forth to meet the competition are somewhat lessening the number of orders received from our Antipodean colonies and from South America and the Cape,

AMERICAN SCREW CO.,

Providence, R. I.,

MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,

AND INCREASING THE ASSORTMENT DAILY.

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a **lower cost to the consumer** than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

No. 235.)

INTERNATIONAL EXHIBITION.

PHILADELPHIA, 1876.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons and decreed an award in conformity therewith.

PHILADELPHIA, November 8, 1876.

REPORT ON AWARDS.

Product: **Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.**

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz:

Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.

G. L. REED. Signature of the Judge.

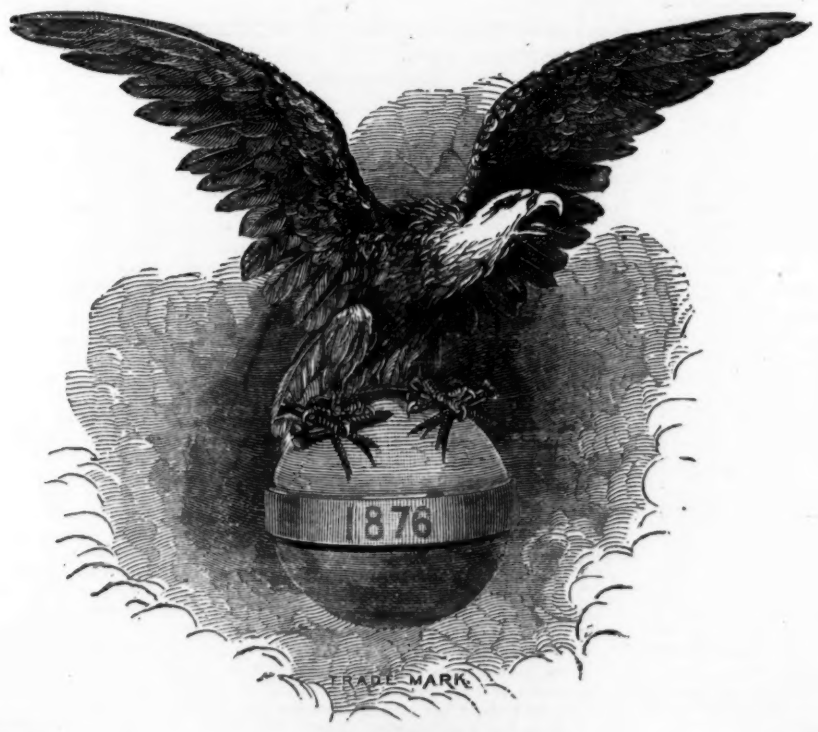
Approval of Group Judges.

Daniel Steinmetz, G. L. Reed, J. Diffenbach,
Jas. Bain, J. D. Imbeden, Dav. McHardy
Chas. Staples,

A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.
Given by authority of the United States Centennial Commission.

A. T. GOSHORN, Director-General.

[L.S.] J. L. CAMPBELL, Secretary. J. R. HAWLEY, President.



After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade-mark, which is also secured to us.

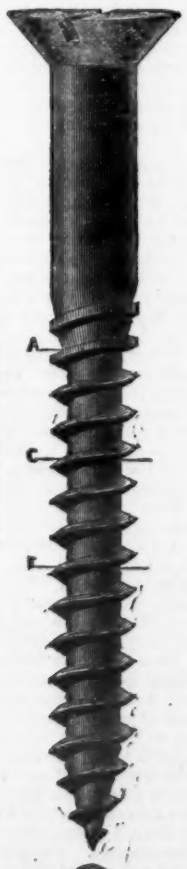
The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

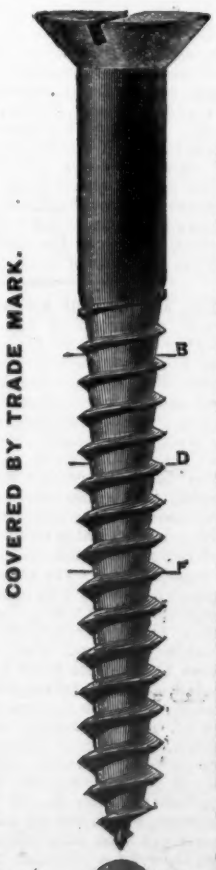
It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.

1776.



1846.
Patented August 30.

Section at Line A B
Section at Line C D
Section at Line E F



1876.
Patented May 30.
COVERED BY TRADE MARK.

Section at Line A B
Section at Line C D
Section at Line E F

Estimated to be FIFTY PER CENT. stronger than a Screw as Commonly made.

CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."

which hitherto have had to be filled via New York. The most mischief just now is being done by the Americans in light pumps. These they are offering upon terms which have led English firms, who produce a more substantial article, to reduce their prices to a level, which leaves them with a very narrow margin. Lower they will not, however, go, and something like a stand is now being made by the English pump firms who have been affected. Importers of the numerous light cast-iron wares so abundantly made in the United States are hereabout complaining that the goods which they have sent out do not lead to repeat orders, and they are, therefore, buying less freely, whether from the States direct or from London and Liverpool agencies. At the same time, light agricultural requirements—those needed for the dairy in particular—are this season being much pushed, and some warehouse keepers are speaking favorably of the prospects. Simultaneously the demand for light forks of American manufacture keeps up."

Speaking of the enameled hollow-ware made in South Staffordshire, the same writer says:

"Makers are, however, likely to meet with competition shortly from an unlooked-for quarter. At Stourport, the Anglo-American Tin Stamping Company, Limited, has secured the exclusive patent rights in the British Isles of the process of manufacturing the wrought-iron mottled enameled ware invented in the United States, and which has met with so much favor, not in that country alone, but also in Australia, South America, the West Indies, and other places. The company now have their enameling works nearly completed, and will soon be in regular 'swing.' The ware is registered in the United States as 'stone ironware,' as the mottling, by skillful manipulation in the manufacture, is made to resemble granite, marble, slate, and such like. The glaze or enamel is so hard that it takes nearly a white heat to fuse it, hence it will withstand any heat in cooking, and is unaffected by acids. The ware is enameled inside and out. This makes it very durable, and allows of the cooking to be done with less heat than is ordinarily necessary. The enamel is entirely free from lead and other deleterious ingredients. Upon such an advantage no comment is necessary in a journal like this, and at a period when the laws of health were never before regarded as so important. Specimen of these new products of the Anglo-American Tin Stamping Company have been submitted to my inspection, and their lightness and general high quality and appearance should secure for the products a wide sale, especially as the prices are decidedly favorable."

The Sheffield correspondent states that probably no body of manufacturers in England has more fully realized that "there is competition at home and abroad" than have the manufacturers of Sheffield. "When American manufactures were comparatively in their infancy," he goes on to say, "Sheffield supplied a large proportion of the steel required; but, as the productive power of that country increased, the demand has fallen off, and now the entire exports of steel hence to the United States are scarcely equal to what were at one time sent out by one house. The Americans make their own steel, maintain an almost prohibitory tariff, and now little but the best brands are sent out there." The writer then draws illustrations from the lighter trades: "Sheffield had once a larger share of the world's trade in scythes, such as it was; but as the demand has increased by the opening up of new countries, there has been no proportionate increase in the output there. Our chief competitors are the Americans. They began by beating us in their own market; but still we retained our hold on other countries. Canada was a splendid customer of ours. One house alone here, Messrs. William Moore & Co., used to send out thousands of dozens of scythes every year; but on one occasion their workmen struck on a question of wages, and the demand could not be met. The American manufacturers rushed in and swept away the trade; and practically it has since been entirely lost to us. The same houses have since been meeting us in other markets, and they have even made their appearance here, although the fact is not generally known to our scythe manufacturers. At present it is only the thin end of the wedge, but a beginning has been made. An ironmonger in the South of England visited America and there saw their scythes. On his return home he wrote to a Sheffield house to see if quotations for these scythes could be obtained. The Sheffield firm wrote to America for the information sought, but, instead of forwarding the prices simply, they consigned eight dozen of their scythes 'just to see if they would take.' They were distributed in various parts of the country. That was in 1877. The next season the very same people who had had the American scythes wrote for more, and the same Sheffield firm imported 26 dozen. This year the same firm have ordered more, and already 80 dozen have been received in Sheffield from America, and half as many more will have to be ordered. It is true the numbers are a mere bagatelle as compared with what one firm here sent out in the course of a season, but there is the fact that American scythes have obtained a footing here, and where they have gone they have been received with a great deal of favor.

"With respect to garden and agricultural implements the position of things is very different. While our manufacturers were adhering to old patterns the American firms went in for light steel goods, which were received with immense approbation, not only in this but in other countries. Year by year the quantities imported to England have increased enormously, and one house in Sheffield alone have their rakes, forks, &c., over now by hundreds of dozens. A complete change in the Sheffield patterns has been made, and there are firms here now who are producing these articles in every respect equal to the best American patterns. But the American firms have got a good hold of our market; they are able to supply their goods at 20 per cent. cheaper than they can be produced here, and they will take some beating, if ever they are beaten.

"Few of the Sheffield industries have had more serious inroads made into them than the edge-tool trade. At home and abroad American and Continental houses compete with Sheffield firms most successfully. Their improved patterns—the general adaptability of their goods to the uses required—have caused them to make their way wherever they have been introduced. The American ax comes over here, as it goes into other markets, by hundreds of dozens; and there is at present no probability of our trade in that article ever being won back to us. With saws, again, Americans have competed with us to their advantage; but Sheffield firms have changed their patterns, altered their processes of manufacture, and are now able to compete with the Americans in any market in the world.

"The sheep-shear trade is very much in the hands of Sheffield manufacturers still, and the changes that are being made in the system of production will enable them to supply the demands of the world, however great they may be. With close unions it was impossible to increase the number of workmen as occasion demanded; but as machinery can be multiplied to any extent, so the output can be regulated to meet the demand. The Americans have commenced the manufacture of shears, but with what success may be gathered from the fact that large supplies are still drawn by their own people from this country. One Sheffield house has been asked this season to make a shear patented by an American firm, because, they say, 'we believe the quality of your goods is so much superior to anything we can get made here.' The price and quality of the shears sent out by Messrs. Burgon & Ball and others render it unlikely that foreign houses will be able to injure our trade much in that article. Other houses are beginning to manufacture shears on the same lines, and the hope is confidently entertained that we shall command the great bulk of the trade of the world in the future, as we have done in the past.

"The cutlery trade of Sheffield, in nearly all its branches, has suffered most severely from foreign competition. Our great market at one time, for spring and table cutlery especially, was the United States. They still order largely of spring cutlery and the best classes of table goods from us; but they manufacture very largely themselves, not only for their own market, but for others. Up to the present time foreign houses have done us little injury in the matter of razors. The Americans themselves, who are very fastidious in their choice of these articles, draw their chief supplies from us; and more of these goods are produced in the town now than probably ever before. With scissors the case is different. The Germans have beaten us on our own ground in cheapness and finish, and the Americans in quality and usefulness. In all descriptions of nail nippers, pincers and similar goods the manufacturers of both countries named are running us most closely. Quantities of their goods come into the town and are supplied to customers at home and abroad by Sheffield houses. There are, however, splendid markets still open to Sheffield enterprise. India, China, the Straits Settlements, our colonies, and so forth, are markets from which enormous orders come to hand from time to time. In them competition in foreign cutlery has not become the severe thing it has elsewhere. Sheffield patterns and styles have been imitated very closely, but the market is still open to our goods at a great advantage.

"The competition brought to bear upon the file trade of the town has been most severe, owing chiefly to the efforts of American houses. There are firms here who used to send thousands of pounds' worth of files to America every year who now do not send as many pounds' worth. They are also meeting us in Canada, Australia, the Cape and other markets, and seem determined to win their way wherever they go.

"Apart from producing all the ordinary run of goods, the Americans are, as is too well known, a most ingenious and inventive people. They are continually introducing novelties to meet the everlasting query of travelers: 'Have you anything fresh or new to show us?' But the experience, as a rule, is that although an American novelty takes well on a first journey, it is not usually asked for again. The supply of novelties has to be kept up or there is no trade done. Given certain conditions, our manufacturers are by no means frightened about foreign competition."

The Cleveland correspondent writes: "The question of foreign competition abroad has not hitherto so much affected Cleveland as some other districts, for of its exports crude iron forms a large amount, and this it can make cheaper than any other district; but its sale is to some extent restricted by the heavy duties. More than one firm here have considered whether they could profitably send pig to America, but low prices and low freights are rendered of little use by the heavy duties, and thus American iron workers have to pay much more for their crude iron than they otherwise would. One or two attempts have been made to introduce American hardware, but not with continued success. They are being renewed, however, and last week three sample cases were imported direct into West Hartlepool from Boston, for one of the inland towns of South Durham. In the sale of American goods ironmongers of experience tell me that only in some agricultural implements do customers express any continuance of preference for these goods, and in these there is little difference in price between American and home-made goods. The sale of imported 'notional' goods does not long continue in this district."

Of American competition in Scotland the correspondent of the *Ironmonger* says:

"An endeavor was made some time ago, both by Belgian and American agents, to introduce various kinds of light ironmongery goods and furnishings. The prices were temptingly low, and the general appearance and finish of the articles undoubtedly superior. Peculiar advantages were also offered to the retail trade, and for a time it appeared as if the agents in question were about to establish themselves with a good business in our midst. But after a brief trial the products of Birmingham and Sheffield were preferred. The opinion formed here of the foreign goods was that they were not quite so substantial as the home-made articles; but it was principally on account of their shapes, as in the case of locks, that the Scotch dealer—conservative in everything save politics—withheld his orders.

Our Trade with Manchester.

Mr. Albert D. Shaw, Consul at Manchester, sends to the Department of State the following data on our trade with that port:

The following statement shows the value of declared exports from the Consular district of Manchester to the United States for the year ending September 30, 1878.

VALUE IN UNITED STATES GOLD.

Cottons	$4,821,683.58
Chemicals	707,708.46
Rags and junk	576,303.68
Machinery	312,981.62
Worsted stuffs	264,069.22
Leather hides	42,670.71
Wool	249,688.11
Linens	303,660.54
Hosiery	279,652.61
Carpets	72,657.94
Iron	47,530.29
Silk	97,132.59
Paper	30,889.92
Steel	36,357.69
Rags, mats, &c	2,181.17
Miscellaneous	341,718.40
Total, 1878	8,176,886.53
Total, 1877	9,876,768.09

The above exhibit shows a decrease in the exports for 1878, as compared with those of 1877, of $1,699,881.56. The decrease in 1877, as compared with the exports of 1876, was only $264,324.84. This strikingly illustrates the present depression in trade in Manchester. The decrease in the number of invoices certified at this Consulate during the past six years is as follows: 1873, 11,128; 1874, 9784; 1875, 8176; 1876, 6043; 1877, 5824; 1878, 5223. This record shows clearly the steady falling off in the number of invoices from year to year, and not only has there been a large decrease in the number, but also in the amounts of invoices as well. It may be well to add also that all signs indicate a still greater decrease in the future.

American ranges and stoves are far superior, in convenience and finish, to those now in general use in England, and all that is necessary to gradually supplant them is for American manufacturers to open in the chief cities and towns proper show-rooms, where the superiority of their work may be readily seen and practically tested. Prices are comparatively high for most kinds of English hardware, and nearly all articles in the small hardware line are much inferior to our own, both in workmanship and pattern. The prejudice against American-made articles is great, but this will readily yield to superior merit.

The only effectual way to make known the excellence of American manufactures is to place them on sale, under favorable conditions, in the various trade centers in Great Britain. Dealers here, as elsewhere, are not averse to selling anything of foreign manufacture which allows them good profits, providing the same is well made and gives satisfaction to purchasers.

Advertising alone amounts to little, because an article must be seen, so as to have it carefully examined and fully tested practically, before it will sell to any great extent. This is especially true of all American inventions. High-colored accounts of "wooden nutmegs," "shoddy" and "Yankee 'cuteness" generally have struck deep into the memories of consumers here, and nothing but the severest tests will induce them to purchase new or novel inventions coming from the United States. Formerly English manufacturers were extremely indifferent about adopting American styles or patterns, in any way. Now this is constantly being done to a greater or less extent. English imitations of American manufactures are quite common, although frequently much inferior to the original. In agricultural implements this is largely the case, but our productions are, nevertheless, greatly superior, in many respects, to the English imitations. Everything manufactured for English markets should always be carefully made, and of the very best materials. Defects arising either from poor materials or indifferent workmanship, are always made to do good service in keeping alive prejudices, already far too strong, against everything coming from our country. Care in this respect is of almost national importance, for the reason that failures in one line of American manufactures seriously affect the popularity of all articles sent.

A good article is the best possible advertiser American manufacturers can send out, and, with a high order of merit in their productions, combined with low cost and wise methods in bringing them prominently into notice in English markets, there can be no reasonable doubt that they will not only meet with popular favor, but, in good time, find a large and profitable market here.

It is undoubtedly true that the rapid, and to foreigners astonishing, development of manufacturing industries in the United States, have placed special lines of American manufactures in the front rank in many of the great markets of the world. This fact is becoming alarmingly apparent to many in Great Britain, and is the cause of no little solicitude for the future. The exceptional condition of national affairs during our civil war, and during the Continental wars almost immediately following, led to vast additions to the producing power of manufacturers in Manchester. The almost unlimited demand for the manufactures of cotton, woolens, steel and iron, impressed capitalists with the belief that a lasting trade had been secured, and immense sums were expended in building new factories and promoting new enterprises.

The return of peace was followed by an unexpected and wonderful development of manufactures, both in the United States and in other countries, and, as a consequence, the prosperity of Manchester manufacturers received a serious check. What the result is to be no one is now able to divine. Many believe that, in order to save her manufacturers from ruin, the "free-trade" policy of England must be changed, in view of the attitude of friendly powers upon commercial policies. Others hold that the hard times are caused by overproduction at home and widespread financial depression abroad, and that the dangers of the present will pass away with the advent of prosperous times. A small minority prophesy that the United States are about to prove able to successfully compete with all the world on even terms, and then outstrip them all in the commercial rivalry for first place. Finally, a great majority are waiting, like a multitude watching the archer's arrow shot into the air, wondering where it will come down, and if they are in danger of being struck by it in its fall.

Distress widespread and general prevails, and the wisest are gloomiest about the prospects for the future. It is held by many that the day has gone by when raw materials will long continue to go before manufactures.

The price of labor having now nearly reached a common basis in all European countries, old conditions are changed and new phases of the old question of "capital and labor" are constantly arising. It is an open question now whether manufacturers in England can long thrive under their free-trade theories, in competition with foreigners protected by tariff laws. In the United States the raw materials—cotton, copper, coal, iron, wood and others—are abundant almost without a limit; and many now believe that with improved machinery, energetic and skilled labor and enlarged capital, American manufacturers are destined to soon become the first in the commerce of the world. That raw materials can best be manufactured near the place of production, all things being equal, no one can doubt. Commerce imposes a heavy tax on all exportations, and manufactured articles can best afford to pay this. The policy of England has long been to encourage the free introduction of all raw materials, with a view of manufacturing the same and selling the products to the exporting countries. If, therefore, competition becomes so keen from abroad as to enable the producers of raw materials to convert them into manufactures at home, and then substitute manufactures for exportation in place of raw materials, there will be a strong likelihood that the present commercial policy of England will eventually be modified by establishing a duty on certain classes of manufactures, so as to compel the exportation of the raw materials again. Vigorous articles are constantly appearing in English newspapers complaining bitterly about foreign tariffs, and pointing out that while the markets here are free to all, the tariffs of other countries in many lines practically shut out English manufactures. Public sentiment is evidently undergoing considerable change in regard to the advisability of continuing the present trade policy here, in view of the fact that other nations which are sharp competitors with England for an enlarged commerce, hold to so-called "hostile tariffs."

The present distress among English manufacturers will, if not speedily relieved, assume alarming proportions. Indeed, it has already become more serious than the general public are aware of. In view of this condition of commercial affairs, the constant, and in many lines the increasing, shipments of American manufactures into Great Britain, must sooner or later create discontent among English manufacturers. Already a very strong feeling exists against the so-called injustice of allowing American manufacturers a free market here, while American markets are not profitably accessible to English manufacturers, owing to the tariff. The result, it may reasonably be expected, will be the imposition of a tariff upon American manufactures, and this, too, at a not very distant day.

The popular sentiment now is overwhelmingly in favor of free trade; but with increasing distress among manufacturers—with drooping industries and failures on every hand—with discontented and idle operatives—it is only reasonable to expect that English manufacturers will, as a measure of relief and a hope of better results, insist on "reciprocity in trade or reciprocity in tariffs." It is easy to favor free trade so long as it is profitable for manufacturers to do so; but when it invites ruinous competition from abroad without extending free markets, it does not generally take long for this vitally interested class to change their minds about the wisdom or practicability of any commercial policy, and to clamor for a change of laws. At present some of the ablest writers in England are endeavoring to account satisfactorily for the widespread depression in the manufacturing strongholds of the nation. Most of these have given nearly every reason but the right one, viz.: "foreign competition," for the unfortunate condition of trade. When, therefore, the manufacturers, as a class, become convinced that the expedients of the present will not bettes the outlook, by increasing their orders or saving them from loss, it does not need great prescience to predict that they will, if they can, compel a change in the commercial policy of the country.

The colonial interests at stake command vast political influence and, although it may now appear extremely improbable, I am yet fully convinced that before many years pass England will reverse her present commercial policy to foster her grand manufacturing industries, unless nations with whom she competes speedily adopt a policy more in sympathy with that apparently so popular within her own borders. Manufacturers, not unlike armies, grow restless after a time at being fired upon without the privilege of returning the fire.

For these reasons and others equally as strong, American manufacturers should be warned of the threatened danger which I have briefly pointed out—*i. e.*—the imposition of a tariff on their manufactures coming into Great Britain.

The collapse of the silk and sugar interests in England points to broken, but not forgotten monuments, marking in their ruin the loss of industries of no small importance; and, be it remembered, these examples rise before all depressed manufacturers here to-day as evidences of early sacrifices to "free trade." Moreover, they are painful reminders that possibly the beautiful theory of "free trade" may, like the circling currents of the fabled maelstrom, be drawing them nearer and nearer a point beyond which certain disaster awaits them unless a change of trade policy is secured.

Distress develops unrest and compels new methods. Theories, however popular, are generally overborne by the needs of waning and endangered national industries. This is the old rule, and American manufacturers will act wisely if they meet this phase of the present commercial relations between this country and Great Britain as it deserves to be met. If they do not, they may regret their inaction after it is too late to correct their mistake. The sure means to prevent a tariff in England is a gradual reduction in our tariff, so as to silence the cry of injustice now so forcibly and prejudicially urged against us.

In many classes of goods our manufacturers can now openly defy outside competition, and outbid foreigners in distant markets as well. The sooner Americans practically demonstrate that they can successfully compete with all enlightened nations in any line of manufactures, the raw materials of which are found in the United States, the sooner will they control popular and expanding markets in all quarters of the globe.

Labor and Wages.

All the works along the Monongahela River, as far as we can learn, are running at three cents, with the exception of Brown's, at Saltsburg and Port Perry, and quite a lot of coal has already been started for the lower markets.

The miners of the Pomeroy (Ohio) Coal Company, including the Dabney, Peacock, Diamond and Minersville mines, have renewed their contract for another six months at the old terms—$2 per 100 bushels for clean coal, and $1.60 for mixed coal—and all are running. On this basis all the other mines run, and it is expected the works will continue to run steady for a while. The miners of the Excelsior Works, who were reported in under the ruling price, are now working on the same basis as the Pomeroy Company.

Forty-eight puddlers and helpers in the Altoona Rolling Mill were discharged last week because they had organized themselves into a lodge of "Amalgamated Iron, Steel and Tin Workers' Association of the United States." The officers state that no member of any union will be allowed to work in the mill, and if the men leave the union they will be given work again. There is no trouble about wages. The men are quiet, and will not interfere if others are employed. The men continued idle for a few days, but we understand that they have abandoned the union and are at work at the old prices.

The following are the prices paid and condition of work along the Connellsville Railroad: Sewickley, Penn and Gas No. 4, working full time at 2 cents and no checkweighman; Blackball, idle; W. L. Scott's (Moore's), 2 cents and no checkweighman; Armstrong's, 2½ cents and no checkweighman; Whiteball (Shaner's), a few working at 45 cents per ton and no checkweighman; Bigley's (Alpsville), idle; Horsey Hollow, working full at 2½ cents.

The miners who were convicted of riot in Washington County, Pa., have been released on the payment of the fine, which was 1 cent each, and on giving a note for $50, to cover the costs. They were unable to pay the costs, which amounted in the aggregate to $3000, and their friends outside were unable to give a bond for their payment. After considerable discussion the Commissioners agreed that the county should pay the costs, and that the prisoners should each pay the fine of one cent and give a note for $50, as security for the costs.

It is said that Duncan & Co., Pittsburgh, have about concluded a compromise with their men and that the making of glass will be resumed in a short time.

In the Lehigh region operations are progressing quietly. Markle's men are out on a strike on a local question of basis. This is the only case of disagreement at present, notwithstanding the report that the men of the whole region were going out.

The Bridgeport, Ohio, coal miners are talking of a strike, the cause of their dissatisfaction being a reduction of a quarter of a cent per bushel in the price paid for digging.

Keys and Locks.

A writer in the *Magazine of Art* gossips as follows about keys:

The history of keys abounds with interesting matter, and takes us back almost to the beginning of civilization. The exact place and date of their first use has not yet been determined, but their origin has been variously attributed to Egypt, Phœnicia and Greece. We find in Homer's "Odyssey" a simple appliance in the shape of a leathern thong inserted through a hole in the door, which, with the help of a ring or hook attached to it, would fasten or unfasten from the outside a bolt within. This was probably the precursor of the key. Those who examined Dr. Schliemann's famous collection will not have failed to notice a very ancient fragment of bronze, somewhat in the form of a key, which is supposed to have secured nothing less than the Trojan treasure itself. But when we come down to Roman times, we arrive at a period in which locks and keys were established in constant use. It was a general custom for a Roman bride, on first entering her husband's house, to be presented with the keys of the household, except that of the cellar, which, prudently or imprudently, was always left in the custody of the husband. The museums of Europe possess manifold specimens of this epoch, which all bear a strong ancient character, though differing in many varieties of pattern. They are generally made of bronze, but sometimes occur also in iron—or rather, perhaps, the former metal has lasted the longest. Unfortunately, the locks to which they belonged having been made chiefly of iron, have not withstood decay, and so do not enable us to judge of their mechanism. But the bronze keys are not unfrequently found in a very perfect condition, and the evidence of their construction is sufficient to show that the handiwork of the Roman locksmith was not unworthy of comparison with that of our own time. Many have been discovered in London itself, some of which may be seen at the Guildhall Museum, and specimens have not been wanting among the *scavi* at Pompeii and Herculaneum.

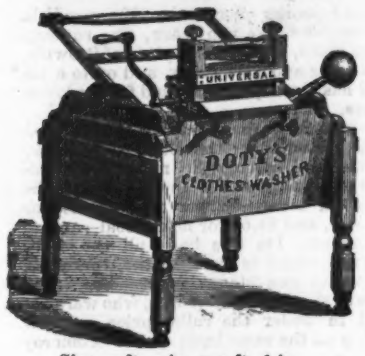
METROPOLITAN WASHING MACHINE COMPANY,

32 Cortlandt Street, New York,

MANUFACTURERS OF

CLOTHES WRINGERS, WASHING MACHINES AND MANGLES.

DOTY'S IMPROVED CLOTHES WASHER.



Size, 2 ft. 4 in. x 2 ft. 6 in.
Family Size, $14.00; Wholesale, $9.00
Hotel " 16.00; " 10.00

UNION WASHER.

Size, 3 ft. x 2 ft. 2 in.
Retail, $18.00; Wholesale, $12.60
With Wringer, $27.00; Wholesale, $18.50

THE AMERICAN WASHER.

This Washer is simple in construction and easy of operation.
Price, Retail..... $4.00
Per doz., Wholesale..... 12.00

AMERICAN MANGLE.

SIZE OF ROLLS.

	Length.	Diameter.	(Discount 25 %)
No. A, 33	in.	6 in.,	worked by hand. $100.00
No. B, 33	"	6 "	Steam power.... 125.00
No. 1, 26½	"	6 "	" " 100.00
No 2, 26½	"	6 "	worked by hand. 75.00
No. 3, 23	"	5¼ "	" " 50.00

"UNIVERSAL" AND "NATIONAL" CLOTHES WRINGERS.

NATIONAL, No. 2½.

Size Rolls, 10 in. x 1¼ in.
Retail, $7.00; per doz., $60.00.
Galvanized Malleable Iron Frame. Can neither break, rot nor rust.

UNIVERSAL, No. 2½.

SMALL FAMILY SIZE.

Size Rolls, 10 in. x 1¼ in.
Retail, $7.00; per doz., $60.00.
Frame the same as No. 2 Universal.
Rowell's Cog Wheels at both ends.

UNIVERSAL, No. 2.

Usual Family Size.

Rolls, 10x1¾ inch.
Retail, $7.50; per doz., $63.00.
Over 500,000 of this size have been sold.
Rowell's Cog Wheels at both ends.

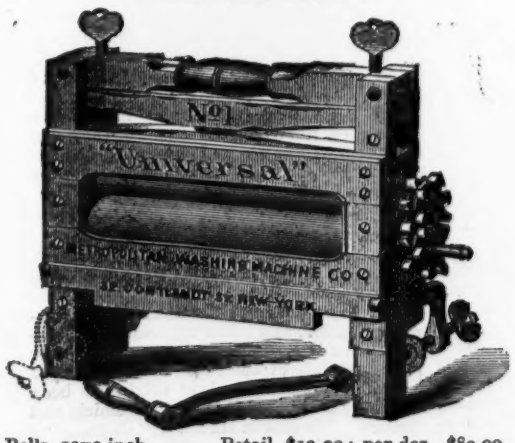
UNIVERSAL, No. 1½.

Large Family Size.

Rolls, 11x1⅞ in. Retail, $8.50; per doz., $71.00.
Swivel Clamps. Fits Round or Set Tubs.
This size having longer Rolls and greater capacity than No. 2, wrings large articles with greater ease, and with less strain on the machine.

UNIVERSAL, No. 1.

Hotel or Laundry Size.



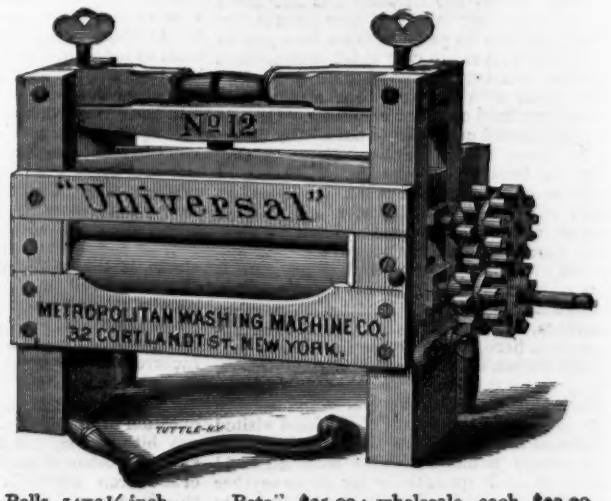
Rolls, 12x2 inch. Retail, $12.00; per doz., $89.00.
The best Set-Tub Wringer ever made. Swivel Clamps, arranged to swing either way. Wrings backward and orward from either side.

UNIVERSAL, No. 8.

Large Hotel Size.

Rolls, 14½x2¼ inch. Retail, $16.00; per doz., $141.00.
Adjustable Lever Clamps. Fits tubs of any thickness. Rowell's Double Cogs, with alternate teeth, so long they never play out of gear. This Wringer is much used on Set-Tubs in Hotels and large Laundries.

UNIVERSAL, No. 12.

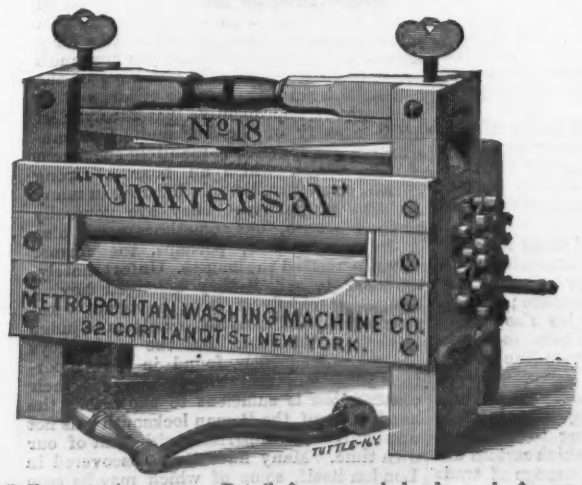


Rolls, 14x3¼ inch. Reta" $25.00; wholesale, each, $20.00.
A very strong, durable Wrin for heav
power.

LARGE SIZES TO RUN BY POWER IN HOTELS, LAUNDRIES AND FACTORIES.

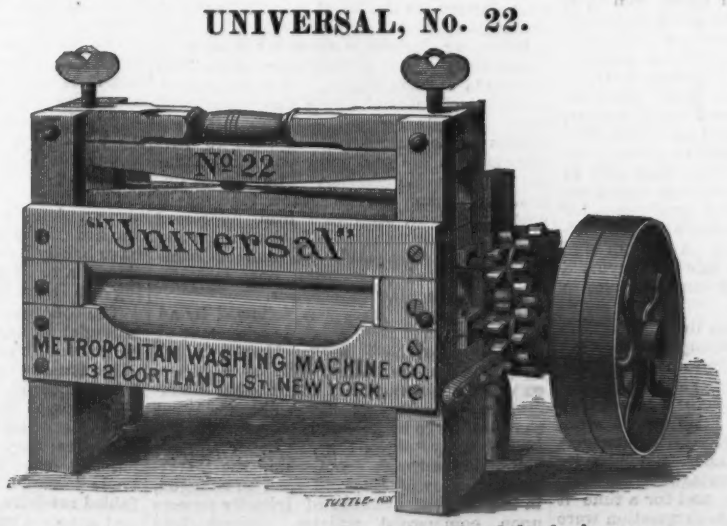
UNIVERSAL, No. 18.

For Hand or Power.



Rolls, 17x2¼. Retail, $35.00; wholesale, each, $25.00.
For Power, Laundry or Factory use.

UNIVERSAL, No. 22.



Rolls, 17x3¼. Retail, $45.00; wholesale, $32.00.
Several thousand of this size are in successful use on Power Washing Machines, in Factories, Sugar Houses, Laundries, &c. The best Power Wringer ever made.

The Universal Wringer has been 18 years on the market, and is too well known to need special "puffing." Thousands are now in use, which have done weekly service for over ten years, and are still as good as new.

Every Universal Wringer is Warranted.

Crown Fluting Machine.

Original "Knox" Fluting Machine.

American Fluting Machine.

Eagle Fluting Machine.

THE

AMERICAN

MACHINE CO.,

MANUFACTURERS OF

Hardware

SPECIALTIES.

OFFICE AND FACTORY:

No. 1916 to 1924 North Fourth St.,

PHILADELPHIA, PA.

Branch House:

No. 128 Chambers Street, New York.

SPECIALTIES:

Crown Fluting Machines,

Star Fluting Machines,

Eagle Fluting Machines,

American Fluting Machines,

Original "Knox" Fluting Machines,

Crown Hand Fluters,

Crown Plaiting Machines,

Bickford Portable Pump,

Crown Christmas Tree Holders,

Crown Can Openers,

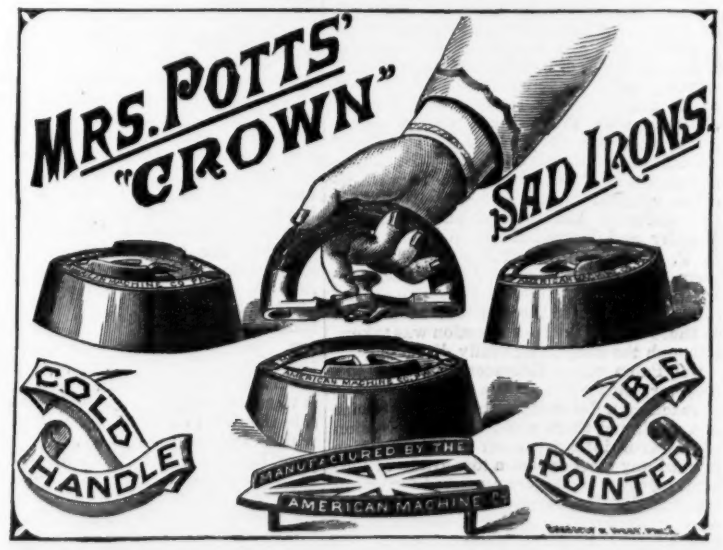
Mrs. Potts' Patent Crown Sad Irons,

&c., &c., &c.

Crown Hand Fluter, No. 1.

Crown Hand Fluter, No. 2.

Crown Hand Fluter, No. 3.



Steel for the East River Bridge.

A special meeting of the trustees of the New York and Brooklyn Bridge was called for the afternoon of the 19th inst., at the request of Mayor Howell, of Brooklyn, and Controller William G. Steinmetz, to reconsider the decision to use steel instead of iron in the superstructure of the bridge, in order that they might be better satisfied as to the advisability of the change. Controller Steinmetz sent a letter to President Murphy, in which he said that he (Mr. Steinmetz) had found in the specifications that a low grade of steel was to be used, and that a certain patented process was specified. He adds:

"I cannot see, therefore, why any such steel should be adopted, for which we have to pay nearly twice as much as for iron, and do not gain anything but the risk of having material which is not trustworthy. If crucible steel, with an elastic strength of from 65,000 to 75,000 pounds, with an ultimate strength of 120,000 to 125,000 pounds, 12 per cent. elongation and 25 per cent. reduction of area, is used, it would reduce the weight of the superstructure from 1500 to 2000 tons. This will be a great relief of the dead weight on the cables, the safety coefficient of which certainly can never be placed too high. The reduction in the weight of the whole means also a reduction of sizes of all members; hence decrease of surface exposed to windage, and consequently this gives additional strength to the structure as a whole. It is evident that the requirement of steel of not less than 40,000 pounds elastic and 70,000 pounds ultimate limit, will not be furnished by the manufacturers at any higher standard than that; but if steel of 70,000 pounds elastic and 120,000 pounds ultimate strength is required, we are assured by the tests to which it has been subjected that we will then have exactly what is needed."

Mr. Steinmetz, in his letter, also refers to several requirements of doubtful meaning in the specifications relative to inspection and delivery. He says, in reference to the manner of payments, that it is of great importance to have their financial condition considered before entering into the contracts, in order that the board may not bind themselves to pay without being assured of having the means at their disposal to fulfill their promises, as a failure to do so might lead to vexatious and expensive litigation.

The specifications under which advertisements have already been published, ask for proposals for about 5000 tons of steel, required for the main span and two land spans of the suspended structure of the bridge. This superstructure will extend 1595 feet 6 inches from center to center of the towers, and each land span has a length of 930 feet from the center of the tower to the face of the anchorage. The structure is to be 86 feet wide, and suspended from the four 16-inch cables by means of suspenders. The only reference in the specification to the quality and kind of steel is as follows:

"All of the steel used must be of a mild, uniform, elastic, and ductile quality, suitable for bridge members. Siemens-Martin, or open-hearth steel, or Bessemer steel under the Hay process, will be preferred."

All of the steel used in the superstructure must be of the same character, unless specially ordered otherwise.

The specification was prepared as it is given by the trustees. It has been taken as being in favor of those steels named, the patented processes, instead of crucible steel. The object of the meeting was to discuss the subject of using crucible steel, on the ground that more strength would be obtained with less weight, and it was also claimed in favor of crucible steel that, owing to the great improvement in two years past in its manufacture, tending to render it cheaper, with the reduced weight consequent on its use, the trustees might adopt it with little additional expense. The different members of the board have formed decided opinions upon the relative merits of the different kinds of steel. President Murphy and Messrs. Henry W. Slocum, J. S. T. Stranahan, Controller W. G. Steinmetz, Thomas Hitchcock, John T. Agnew, Dr. Samuel Hall, Thomas Carroll and Mr. J. G. Davis met in the trustees' rooms, but as there was no quorum no action was taken, although the subject was fully discussed.

Col. Paine, of the Engineer Corps, said to a reporter that there had been much time spent in reaching a determination as to the choice of a steel, and there could be no expression of disfavor inferred from the specification toward any steel except a low grade of Bessemer steel. Bids were expected for crucible steel, but the characteristics which they most seek for are mildness, ductility, and elasticity. It is a scientific fact that as steel ascends in strength it decreases in other qualities. The great danger to a bridge comes at the point of impact, and it was more of an object to get a steel with qualities to resist and carry off the blow, than to get one of more strength of such a nature as lies in crucible steel. The question of windage was a serious one on the East River Bridge. The lighter the structure the more liable it is to damage from the winds. If it is of the weight now fixed it would resist the wind. Then it should be of sufficient weight to resist the momentum of the load which comes upon it, and for this purpose must be greater than the load in weight. There were numerous other scientific reasons which made in necessary not to sacrifice mildness and ductility to mere strength. He had before him the results of many tests, which he believed fully demonstrated the correctness of the judgment of the engineers in favor of some steel which has to be considered for its virtues as well as for its strength. A second meeting was called for yesterday afternoon, but we are unable to give any report of its proceedings in this issue.

The Belmont Nail Works, of Wheeling, W. Va., are to be sold on the 28th of June next, to satisfy a mortgage debt of $200,000 that rests upon it. The Wheeling *Intelligencer* of the 17th inst. says that the present likelihoods are that the property will pass into the hands of the bondholders, by whom it will be reorganized in some shape or other. The concern has always been esteemed one of the most valuable iron properties in the Ohio Valley, and although it has been sold twice before to satisfy some complications in the management, has made a great deal of money for its owners. The terms of sale require one-fourth of the purchase money down, and the remainder in six, twelve and eighteen months. What the property will bring is a matter of much speculation. It is safe to say that the bondholders will not let it go at a sacrifice to their interests.

The Effects of Free Trade in Great Britain.—Sir Edward Sullivan, in a letter to the Manchester *Guardian*, says: Enthusiastic free traders, absorbed in the worship of their fetish, smile at these things. They are not alarmed at the value of our exports falling off £65,000,000 in five years; at the balance of trade against us having increased from £60,000,000 to £142,000,000 in the same period; at our imports doubling our exports; at our manufactured goods being prohibited in foreign markets; at productive industries perishing under free trade and springing into vigorous life under protection, &c. To them all this is quite natural and much to be desired. They apply to British industries the Darwinian theory of natural selection—only the most fitting will be preserved. So long as we can produce anything cheaper than the rest of the world, so long we shall continue to produce it, and no longer. But carry the principle to its limit. Suppose there is not a single manufactured article that cannot be produced cheaper in some foreign country than in England—and with the spread of capital and machinery among the thrifty and inventive workers of the world this is not impossible—how are we to find work for our industrial millions? Foreigners look on in gratified dismay. They see that 10 years of general peace, when all the industrial population of Europe and America could devote themselves to labor, would, under the present condition of free trade on our part and prohibition on theirs, extinguish absolutely and entirely the manufacturing existence of England. They can scarcely credit their senses; they cannot believe it possible that the English people, with their hard heads and common sense, will allow a school of doctrinaires to force their theory to the bitter end, and bring ruin on the industrial millions of the country.

Underground Pneumatic Tubes.—The Union Telegraph Co., after four years' experience in operating pneumatic tubes laid underground for the conveyance of messages, are now just completing a connection with the leading daily newspaper offices. By this means messages can be sent in the manuscript with the least possible delay. The plan is to lay several pairs of brass tubes parallel to each other along a deep trench dug in the street, inclosing them in durable wooden boxes. These tubes are made in sections, and screwed together as they are put down. They are 2¼ inches in diameter. The message is placed in a small cylindrical leathern box, which is almost instantly shot through the tube by compressed air. The time occupied in the transmission of a message is very brief. From the office of the company, corner of Broadway and Dey street, to the Stock Exchange, in Broad street, about a quarter of a mile, the time is 25 seconds. Power is furnished at the telegraph headquarters by a compound steam engine, by means of which air can be either supplied or exhausted at will, causing the message to move either backward or forward. The brass tubes are drawn solid, so that their interior surface is perfectly smooth.

Novel Use of a Locomotive.—Every day proves the truth of the old adage: "Necessity is the mother of invention." Our attention has just been called to a new way of utilizing the power of a locomotive. Some years ago Porter, Bell & Co., of Pittsburgh, sent one of their small locomotives to the famous Dutch Flat in California. It was used for hauling logs from a timber tract to the saw mill. But as much of the timber was in a deep cañon and the mill was on the hill top, the ingenious owners desired to make it do another kind of duty as well as its own. They arranged an inclined track, placing a car on it, to which they lash the timber, and, by a wire rope, draw it to the top. The rope passes over a drum at the top of the hill, and the power is supplied by the little locomotive. The *modus operandi* is to run the engine on to a side track alongside the drum on to friction wheels, through which the power is communicated; and here, like a dog in a churn-wheel, or a horse in a tread-mill, the engine revolves its drivers without itself advancing, and lifts its load 600 feet in hight in 1200 feet of track, the engine thus becoming practically a stationary engine.

Herr H. Gruson, of Berlin, proposes to use chilled cast iron as armor plates for the turrets of ironclads and for coast defenses.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, April 23, 1879.

The event of chief interest in financial circles during the past week was the calling in for redemption of the 10-40 5 per cent. bonds, of which the total issue was $194,556,300. The redemption is announced for 90 days hence. This remarkable operation was rendered possible by the bids received on the 16th inst., in conformity with a Treasury circular offering the new 4 per cent. bonds and $10 certificates at 100½ and accrued interest. The bid of the syndicate, represented by the First National Bank of New York, and Fiske & Hatch, also of this city, was for $194,556,300. This was accepted for $150,000,000 of the 4 per cents., but Mr. Sherman declined to sell the certificates until they had been open to popular subscription for 60 days. If after this time any remain, the syndicate will be allowed to take them. As there will be no more 4 per cents. sold for two years, or until the time shall come for the redemption of the 6s of 1881, the market price of these securities has advanced here and in London 1⅜ %, coincident in the latter market with an advance in consols to 99¼.

Since our last report the local money market has become easier, and the position of the banks is stronger. The rates are 3 @ 4 % on call; 2 @ 4 % on time loans; 4 @ 5 % on prime mercantile paper.

In the bond market governments are strong, and the new 4 per cents. have advanced to 104. Below we give a table showing the prices of governments at the close of business to-day. Holders of large amounts of the 10-40s and called 5 per cents., who are not satisfied with the prospect of a 4 % income, are looking about them for other safe and more profitable investment, and this is giving strength to the best class of railroad mortgages and other interest-paying securities.

In the stock market speculation has been active and the market feverish. Below we give the quotations of active shares at the close of business to-day.

The bank return shows an increase of $3,260,575 in surplus reserve, which now stands at $9,483,950, against $17,608,550 at this time last year, and $11,067,650 at the corresponding period in 1877. The loans show an increase this week of $708,400; the specie is decreased $28,300; the legal tenders are augmented $4,526,700; the deposits other than United States are up $4,951,300, and the circulation is increased $25,100.

The following is an analysis of the bank totals of this week compared with that of last week:

	April 12.	April 19.	Comparisons.
Loans	$230,442,900	$231,151,300	In.... $708,400
Specie	18,908,900	18,875,600	Dec.... 28,300
Legal t'nd'rs	36,145,400	40,072,100	Inc....4,526,700
Tot. reserve.	55,049,300	59,547,700	Inc....4,498,400
Deposits	195,303,700	200,255,000	Inc....4,951,300
Reserve required	48,825,925	50,063,750	Inc....1,237,825
Surplus	6,223,375	9,483,950	Inc....3,260,575
Circulation.	19,696,100	19,721,200	Inc.... 25,100

The foreign trade movements at the port of New York since our last issue are shown in the following tables:

IMPORTS.

For the week ended April 19:

	1877.	1878.	1879.
Dry goods	$1,387,175	$1,399,783	$1,691,791
General mdse	4,054,995	4,459,335	5,057,252
Total for week.	$5,442,170	$5,859,118	$6,749,043
Prev. reported.	97,585,874	84,703,996	88,616,307
Since Jan. 1	$103,028,044	$90,653,114	$95,365,350

Included in the imports were articles of merchandise valued as follows:

	Quantity.	Value
Anvils	235	$2,092
Brass goods	19	1,542
Bronzes	1	926
Copper		12,047
Cutlery	104	26,477
Gas fixtures	1	891
Guns	85	13,803
Iron, pig, tons	300	3,787
Iron, sheet, tons	14,990	13,240
Iron ore, tons	538	1,379
Iron, other, tons	246	4,907
Metal goods	137	10,038
Nails	53	1,322
Needles	15	7,541
Old metal		532
Plated ware	3	485
Percussion caps	5	88
Saddlery	1	165
Steel	1,102	17,283
Spelter	55,172	1,990
Tin, bxs	22,485	114,815
Tin, 2,917 slabs	167,643	24,473
Wire	5	1,030
Zinc	1,052	86

EXPORTS, EXCLUSIVE OF SPECIE.

For week ended April 22:

	1877.	1878.	1879.
For the week	$5,626,808	$5,676,321	$5,505,487
Prev. reported	76,147,330	101,881,135	90,974,800
Since Jan. 1	$81,774,138	$107,557,456	$96,480,287

EXPORTS OF SPECIE.

For the week ended April 19:

Total for the week	$170,961
Previously reported	3,253,974
Total since January 1, 1879	$3,424,935

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. Currency 6's	123¾	123½
U. S. 6's 1881 registered	106¾	106½
U. S. 6's 1881 coupon	106¾	106½
U. S. 5's 1881 registered	103¾	103½
U. S. 5's 1881 coupon	104¾	104½
U. S. 4½'s 1891 registered	106¾	106¾
U. S. 4½'s 1891 coupon	106¾	107
U. S. 4's 1907 registered	101¾	101½
U. S. 4's 1907 coupon	101¾	101½
Central Pacific Gold Bonds	111	111½

The following were the closing quotations of active shares:

	Bid.	Asked.
Atlantic and Pacific Telegraph	36	36½
Canada Southern	58	59
Chicago and Northwest	60½	60⅝
" Pref	90⅝	90¾
Chicago, Rock Island and Pacific	131¾	132
Chicago, Bur. and Quincy	113¾	114½
Col., Chicago and Indiana Central	7¾	7⅞
Cleveland and Pittsburgh	94½	95
Chicago and Alton	76½	77½
" " " Pref	109	110
Canton	31½	34
Delaware, Lack. and Western	52⅛	52¾
Delaware and Hudson Canal	41½	42½
Express—Adams	107½	108
" American	48⅜	49¼
" United States	49¼	50
" Wells, Fargo & Co	100	100½
Erie	26⅝	26¾
" Pref	48½	48¾
Harlem	156	160
Hannibal and St. Joseph	16	16¼
" " Pref	40⅝	40⅞
Kansas Pacific	47	48
Kansas and Texas	15	15¼
Lake Shore	71¼	71½
Michigan Central	82½	83
Morris and Essex	85⅜	86¼
Milwaukee and St. Paul	42	42⅛
" " " Pref	82½	82¾
Mariposa	5¼	6¼
" Pref	5¼	7
New York Central	116½	116⅝
New Jersey Central	43⅜	43½
Ohio and Mississippi	13⅜	13½
" " " Pref	37	38
Pacific Mail	13⅜	13⅝
Panama	136	..
Pittsburgh and Fort Wayne	106¾	107¼
Quicksilver	12⅜	13½
" Preferred	36¾	38
St. Louis and Iron Mountain	21⅞	22
St. Louis Kansas City Northern	11¾	12
" " Pref	35½	35¾
St. Louis and San Francisco	10⅛	10⅜
" " Pref	11¾	12
Sutro Tunnel	4⅜	4½
Union Pacific	75¼	75⅜
Western Union Telegraph	105¾	105¾
Wabash	28⅞	29
Louis and Nash	54½	55¼
Albany and Susquehanna	86	87
Standard	23	23¾
Alton and Terre Haute	6	8

GENERAL HARDWARE.

Business continues active, and the tone of the market is cheerful and steady as regards values.

In the matter of the failure of the Hart, Bliven & Mead Mfg. Co., Edward B. Mead has been appointed as receiver in New York, and an assignment of the company's property in Connecticut has been made to Samuel Upton. A circular to their creditors is in course of preparation, and will be issued in a few days. In the meantime they are still in the market, and, so far as we can learn, solicit trade as usual. Nothing definite has transpired regarding the amount of liabilities and assets.

The demand for Screws is fair and the tone of the market steady; the production of these goods is well in hand, the leading mills running only 8 hours per day. We are informed that the manufacturers have taken steps to prevent any disturbance of values by parties who purchased stocks of Screws previous to the establishment of the present rate of discount.

The Atlantic States Nail Association held a meeting in this city on Thursday last, at which the card rate was advanced to $2.25, net, for 10d. to 60d. At this price the market is firm, with a fair amount of business.

E. M. Boynton, No. 80 Beekman street, has issued the following discount sheet, to apply to his 1879 illustrated catalogue and price list. Some changes in list prices have been adopted, the most important of which are as follows: Patent "Lightning" Cross Cut Saws, per foot, 60 cents, formerly $1; "Lightning" One-Man Cross Cuts, 75 cents, formerly $1 per foot; "Lightning" Wood Saws, with Patent Cross Bar Frame, $12, formerly $15 per dozen; "Lightning" Wood Saw Blades, 30 inch, $8; 32 inch, $8.50, formerly $10 and $10.50 per dozen respectively.

	Discount. Per Cent.
Boynton No. 35 Hand Saw	35
Butcher Saws	30
Back Saws	30
Cross-Cut Saw Handles, Patent Loop	30
Concave Saws	25
Cane Knives and Saw Knives	30
Common Tooth Circular Saws, from 4 to 72 in. inclusive	30
Common Tooth Champion Saws, Electric Single and Double Hook	30
Drag Saws, Muley & Fay's Patent Scroll Saw	30
Double Edge Hand Saws	40
Felloe Webs and Jig Saws	30
Fret Saw Blades, Compass and Key-hole Saws	30
Files and Rasps, Hand-Cut (on discount sheet)	25
Gang Saws	30
Hack Saw Blades	30
Hand, Panel and Rip Saws	30
Ice Saws and Up-Sets	30
Kitchen Meat Saws	30
Lightning Billet Webs or Wood Saw Blades	30
Lightning Buck Saws, Cross-Bar Frame	30
Lightning Cross-Cuts	30
Lightning Compass Saws	35
Lightning One-Man Saws	25
Lightning Pruning Saws	40
Mitering Rods, Cabinet Scrapers, Plastering Trowels	30
Mill Saws	30
Pit Saws	30
Repairing Saws	25
Resilitting Saws	25
Saw Sets	30
Saw Clamps	25
Saw Rods	25
Saw Handles, "Centennial"	30
Saw Screws	25
Segments Saws and Sheet Steel	net cash
Shingle Saws	30
Screw Drivers	30
Saw Mandrel	30
Turning Webs	30
Wood Saw Blades	30
Wood Saws, Framed, No. 10, 40 & 50	25
Terms, cash in 30 days.	30

The Penfield Block Works, Lockport, N. Y., have added to their line of Patent Wood Lock Faucets a full line with the old style (or T key) metal plugs, wood handles and compressed leather lining, which are to be known as their "Smidt" pattern. Below we give their list:

	Per doz.
No. 11, 7½ inches	$4.00
No. 12, 9 "	4.50
No. 13, 11¼ "	5.00
No. 14, 15 "	6.50
No. 15, 18 "	7.50

Trade discount, 40 per cent.
Packed in boxes of 1 dozen in a box.

Henry B. Newhall, 11 Warren street, is their New York agent. An illustration of this Faucet will be found in their advertisement on page 37.

In our issue of last week the price of L. Coes & Co.'s "Mechanics" Wrench was incorrectly quoted discount 60 and 10 per cent., it should have been 60 and 10 and 10 per cent., which is the regular discount to the trade.

Mallory, Wheeler & Co., New Haven, Conn., have issued an appendix to their catalogue, in which they illustrate an assortment of Rim and Mortise Locks, new patterns of Gold Bronze Bell Pulls, Door Knobs and kindred goods, and a good line of Pad Locks and Pad Lock Keys. Among new Locks they show their No. 57½ Horizontal Rim Night Latch, which is furnished with two flat steel keys, and No. 506 Improved Builders' Horizontal Rim Store Door Knob Lock. This lock is provided with a flat steel key, nickel plated, of the folding pattern, and of entirely new design. They also describe eight styles of Sparks' Horizontal Rim Knob Locks, which have been recently added to their assortment. The appendix is handsomely printed on good heavy paper, and covers 64 pages, 13½x10½ inches. They have issued the following circular. Sargent & Co are their agents in this city:

MALLORY, WHEELER & CO.'S LIST PRICES FOR NEW GOODS, APRIL 15, 1879.

(Attach to our March 1, 1879, Price List.)

Locks and Latches.

	Per Dozen.	Page in 1879 Appendix.
No. 57½	$9.00	16
No. 0231½	5.50	8½
No. X0231½	5.00	8½
No. 0231½	6.25	8½
No. X0231½	5.75	8½
No. 0235½	7.50	8½
No. X0235½	7.00	8½
No. 0235½	6.50	8½
No. X0235½	6.00	8½
No. 506, 1 Key	18.00	9
No. 506, 2 Keys	21.00	9
No. 506½, 1 Key	19.50	9
No. 506½, 2 Keys	22.50	9
No. 506¾, 1 Key	21.00	9
No. 506¾, 2 Keys	24.00	9

We would call especial attention to the above new line of low-priced Horizontal Rim Knob Locks, with Brass Bolts, 4¼ and 4½ inch; Horizontal Rim Store Door Knob Locks, 6 inch, 1, 2 and 3 tumblers, with a new pattern Folding Flat Steel Key, Nickel-plated; also low-priced Horizontal Rim Night Latch, with Flat Steel Keys, Nickel-plated. Attention is also desired to our new patterns of Gold Bronze Metal Door Knobs, Bell Pulls and Escutcheons.

For illustrations and description of above, see 1879 appendix to our illustrated catalogue of 1876, now ready for distribution.

The National Tube Works Company, of Boston, Mass., and McKeesport, Pa., have issued a circular under date of April, 1879, in which they announce that they have withdrawn from all manufacturers' associations with which they have hitherto been connected.

The Providence Tool Company, Providence, R. I., illustrate in their advertisement on page 36, a Patent Anti-Friction Hoisting Block, for hoisting heavy goods where no steam or horse-power is used. It is made of Galvanized Iron and Steel, uses 3 to 4 inch rope, and, it is claimed, will sustain with safety a load of 4 tons. We invite attention to the advertisement referred to. This Block can be seen at the warehouse of their agent, Henry B. Newhall, No. 11 Warren street.

The following circular, which fully explains itself, would have appeared earlier in our columns had it not been accidentally mislaid:

BLIND TRIMMINGS.

BOSTON, March 29, 1879.

Gentlemen: There having been no uniform price on Blind Hinges and Fasts for several years, and prices therefore continually declining, to the annoyance of purchasers and to our own detriment, we have this day agreed upon the following prices for our respective goods, to take effect from this date:

Hinges, per 100 Sets.

No. 1. 3 hole, mall hook	$6.00
No. 1. 2 " " "	5.75
No. 6. (brick) " "	15.00
No. 7. (half brick) "	15.00
Wrought hooks, with wood hinges, 50 cents extra. " " " brick "	$1 extra.

Fasts, per 100 Sets.

No. 1, (or lock) } and similar fasts	$4.00
No. 6, }	
Veazie	6.50
Excelsior	6.50
Hill	3.50
Stover	5.00

Goods packed in less than 100-set boxes, 50 cents per 100 sets, complete, extra. Hinges or hooks separate, ⅔ price. Sill staples, ½ cent each. Back catches and guides, ¾ cent each. No. 6 fast straps (and similar), 1 cent each.

Discounts.

5 per cent. on 500 sets, ea. H. and F. (or 10 boxes.)
7½ " " 1000 " " " (or 20 ")
10 " " 2000 " " " (or 40 ")

Terms, 30 days; 2 per cent. discount for cash on receipt of goods. Yours truly,
B. D. Washburn & Co., Geo. H. Caldwell, Galen Orr & Co., J. W. Bailey, The Security Blind Fast Co., H. M. McIntosh, Hayden & Co.

IRON.

American Pig.—The demand for Pig Iron continues fair, and prices are well sustained. No large transactions are reported since our last writing, and there is nothing speculative in any of the sales that have transpired, all the lots we hear of going direct to the consumer. We quote prime brands, unchanged, as follows: Foundry No. 1, $18 @ $19; Foundry No. 2, $17 @ $18; Gray Forge, $16.50.

Scotch Pig.—There is rather more inquiry for Scotch Iron this week, and sales have been made of 150 tons Glengarnock, to arrive, on private terms, and 50 tons Eglinton, in lots from yard, at our quotations. We quote as before: Eglinton, $19.50 @ $20, and Coltness, $22.

Rails.—The demand for Steel Rails continues active, and we hear of some sales the particulars of which are withheld. In Iron Rails there is also considerable activity, and sales are reported of between 5000 and 6000 tons at $33 @ $36, at mill, according to terms of payment, section, &c. We quote: Steel at tidewater, $45, and Iron at mill, $32 @ $36.

Old Rails.—There is some inquiry for Old Rails, and a sale of 800 tons, Albany delivery, at $20.75, sharp cash, is reported. We quote $20 @ $21 per ton here.

Scrap.—The demand for No. 1 Wrought Scrap is fairly active and the article is reported scarce. We hear of a sale of 150 tons at $24, and quote from yard $24 @ $25—lots ex-ship could be had for a shade below our quotations.

METALS.

Copper.—There have been sales of between 50,000 and 100,000 lb Lake Superior at 16¢. Baltimore is worth about as much. The sale of Australian Copper came off in London yesterday, 300 tons Burra Burra averaging £62, and 600 tons Wallaroo £62. 10/. No news of special interest has been received from the West Coast, but there is a telegram of an official nature from the East Coast, announcing that the Argentine Republic will not participate in the strife, but faithfully carry out its agreement with Chili of December last. The movement in Manufactured Copper continues fair, and the market steady at combination prices, which are unchanged. We quote: New Sheathing Copper, 22¢; Braziers', 24¢; and Bolts, 24¢; Bottoms, 26¢; American Yellow Sheathing Metal, 13½¢; Yellow Metal Bolts, 20¢; and English Yellow Sheathing Metal, 12¢ @ 12¼¢, currency, in bond.

Tin.—The market remains quiet, with a limited demand. We quote large lots Straits, 14⅞¢; Common English, 14⅞¢ @ 15¢; Banca, 17½¢; English Refined being practically out of the market, we do not quote the same. There have been imported since our last 2848 slabs Straits. Export from the Straits during the first half of April, 60 tons to the United States and 220 tons to England. London cables Straits £69, and Singapore $22.50. *Tin Plates* have become very quiet, activity being confined for the moment to a moderate jobbing trade. We quote per box, large lines, ordinary brands: Charcoal Bright, $6.25 @ $6.50; ditto Ternes, $5.75 @ $6; Coke Tin, $5.25 @ $5.37½, and ditto Ternes, $5 @ $5.25.

Lead.—Lead is much offered, but little is marketed, the price for Common Lead for large lots being 2⅞¢, while small lots are held at 3¢. There have been sales of 800 to 1000 tons of Corrodable Refined Desilverized Lead at 3¢. Manufacturers have again reduced their prices, the new list being in force since the 18th inst. We revise our quotations accordingly, and quote Bar, 4½¢; Pipe, 5¢; Sheat, 6¢; Tin-Lined Pipe, 12¢; No. 1 Solder, 10¢; all less 10 % to the trade.

Spelter and Zinc.—The market for common Domestic Spelter has resumed its quiet aspect—but small quantities changing hands. We quote the same 4½¢ @ 4⅝¢; Refined, 8¢ @ 8¼¢; Silesian, 5⅜¢ @ 5¼¢; Bergan-port, from Lehigh ore, 9¢. *Sheet Zinc* is quiet at 6¼¢.

Nickel.—There are no new features. American moves off in moderate quantities at $1.25.

Antimony.—The jobbing demand is most steady, Hallett selling at 11¼¢ @ 11½¢, and Cookson at 11⅞¢ @ 12¢.

COAL.

The market for the past week has been marked by no features of especial interest. The quantity of Coal sold has been large—unusually large, indeed, we think, for this season of the year. Prices are, so far as we can learn, practically unchanged. The Lehigh Coals are, in many sizes, firm at the quoted rates, while the softer Coals are shaded from 10 to 15 cents per ton. A considerable amount of Philadelphia and Reading Coal, which has been sold to meet advances, is in the market, and we think is offered at rates far below the circular figures. For soft Coals in general there are some concessions to be obtained, the amount of which depends upon circumstances.

The domestic trade is good, and families are laying in an unusual quantity of Coal. The reason for this seems to be that the public are pretty well satisfied that Coal at present prices is a safe investment. Manufacturers and large consumers are putting in considerable stocks. Dealers, too, seem inclined to stock up. Under existing conditions, the consumer seems to be perfectly safe in putting in all the Coal that he can find room for. Freights continue without change, vessels being still scarce. This is, consequently, much against the Eastern consumers. The condition of the market, bad as it is, does not seem to have made any considerable impression upon the leading corporations engaged in the Coal trade. As prices have fallen, and more and more of the individual operators kept out of the market, tolls have been reduced, and so the burdens are somewhat equalized. It does not appear, however, that the tolls are now sufficiently low to enable any but the most favorably situated mines to ship without a loss. It is a question whether the carrying companies can reduce their charges materially. Yet, if we consider the nature of the Coal traffic, it would seem that the tolls might be reduced considerably and leave a margin of profit.

OLD METALS, PAPER STOCK, &c.

There is no change whatever to report in the Old Metal quotations this week. The market is dull, as it usually is at this season of the year, and it will very likely continue so for a while. The downward tendency, already noted, still continues in the Paper Stock market. There is no demand for Rags.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	per lb.	$0.12½ @	....
Copper Bottoms	"	.19 @	....
Yellow Metal	₱ lb	.08¼ @	....
Brass, heavy	"	.08¾ @	....
Brass, light	"	.07⅞ @	....
Composition, heavy	"	.11½ @	....
Lead, solid	"	.03¾ @	....
Tea Lead	"	.02½ @	....
Zinc	"	.03¾ @	....
Pewter, No. 1	"	.10 @	....
Pewter, No. 2	"	.08 @	....
Wrought Iron	pr ton.	$16.00 @	....
Light do	"	9.50 @	....
Stove Plate	"	9.50 @	....
Machinery do	"	11.00 @	....
Grate Bars	"	9.50 @	....

The prices current for Rags, &c., are as follows:

Canvas, Linen	per lb.	3 c. @	3½c.
White Cotton, New	"	4½c. @	....
" " No. 2	"	1½c. @	....
White, No. 1	"	3¾c. @	4 c.
" No. 2	"	2 c. @	....
Seconds	₱ lb.	1½c. @	....
Mixed, Woolen	"	2 c. @	3 c.
Soft, do	"	6½c. @	7 c.
Mixed Rags	"	2 c. @	3 c.
Gunny Bagging	"	3 c. @	....
Jute butts	"	2¼c. @	....
Kentucky bagging	"	2½c. @	....
Book Stock	"	1¾c. @	....
Newspapers	"	1¼c. @	1½c.
Waste Paper and Scraps	"	¾c. @	....
Kentucky Bale Rope	"	4 c. @	....
Tarred Shaking	"	1 c. @	1¼c.
Grass Rope		.... @	2½c.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending April 22, 1879:

Hamburg.

	Quan.	V'lue.
Guns, cs	2	$70
Hdw., cs	83	2,126
Tinware, cs	2	125
Copper, cks	18	3,431
Wringers, cs	4	95
Mf. iron, pkgs	1164	5,930
Pl'd ware, cs	2	71
Sandpaper, cs	22	333
Ptlm., gals	217,122	20,000
Sew. mach., cs	1209	26,227
Mach'y, cs	15	2,035
Ag. imp., pkgs	269	7,011
Rifles, case	1	375
Belting, bales	5	1,490
Pumps, pkge	1	50
S. rollers, cs	4	160

Cronstadt.

Slates, cs	19	97

Stettin.

Slate, pcs	51,300	1,800

Elsinore.

Ptlm., gals	231,327	220,000

Dutch East Indies.

Ptlm., gals	275,000	33,688

Rotterdam.

Ag. imp., pkgs	145	4,008
Slates, cs	122	412
Mach'y., cs	1	109
Hdw., cs	3	82
Copper, cks	108	20,306

Stockholm.

Slates, cs	50	225

Antwerp.

Ag. imp., pkgs	57	5,656
Hdw., cs	4	119
Mf. iron, pkgs	23	450
Belting, cs	7	2,051
Lub. oil, gals	8653	1,298

Bremen.

Ptlm., gal	1,310,843	109,986
Pl'd ware, cs	1	175
Belting, bale	1	652
Oil stones, cs	4	100
Sew. mach., cs	10	750
Mf. iron, pkgs	4	140
Ag. imp., pkgs	163	3,335
Mach'y, case	1	40
Hdw., cs	2	70

Bristol.

Ptlm., gals	299,844	28,195
Hdw., cs	5	100

Liverpool.

Ag. imp., pkgs	482	15,332
Hdw., cs	148	5,112
Lub. oil, bbls	45	895
Metal g'ds, cs	9	858
Slates, pcs	69,041	1,800
Sew. mach., cs	12	631
S'dpaper, cs	2	164
Electrotype, cs	2	1,500
Pumps, pkgs	3	556
Mach'y, pkgs	13	3,227
Silverware, cs	4	350
Mf. iron, pkgs	22	184
Glassware, cs	1	40
Belting, bale	1	250
Car mtls., pgs	104	1,808

London.

Freezers	24	70
Mach'y, pkgs	95	5,049
Sew. mach., cs	672	10,472
Meters, cs	52	930
Pl'd ware, cs	5	519
Pumps, pkgs	4	46
Hdw., pkgs	156	3,542
Ag. imp., pkgs	171	8,398
Dies, case	1	300
Slates, cs	83	364
Cars	3	2,790

Glasgow.

Mach'y, cs	4	350
Lub. oil, bbls	150	821
Shooks	500	250
Mf. iron, pkgs	20	67
Cartridges, cs	15	360
Slates, cs	4	15
Hdw., cs	18	255
Sew. mach., cs	51	600

Malta.

Ptlm., gals	15,000	1,800

Porto Rico.

Iron, pcs	763	928
Hdw., cs	17	713
Belting, box	1	90
Mf. iron, pkgs	6	194
Iron bridge	1	65
Mach'y, pkgs	844	22,521
R. R. car	1	262
Surv'y'g ins'ts	4	447
Ag. imp, pkgs	12	292

Marseilles.

Coal, tons	50	150

British North American Colonies.

Mach'y, pkgs	3	250
Coal, tons	914	3,565
Iron ore, tons	24	96
Ptlm., gals	2,550	430

French West Indies.

Ptlm., gals	35,488	4,280
Mf. iron, pkgs	17	374
Nails, kegs	28	85
Hdw., pkgs	64	607
Glassw're, pgs	142	878
Mach'y, pkgs	32	175
Iron bars	65	76
Pl'd ware, cs	1	130

British Honduras.

Hdw., pkgs	46	818
Ptlm., gals	266	37
Nails, kegs	2	47
Glassw're, pgs	15	159
Sew. mach., cs	3	$60
Copper, pkgs.	4	173
Mf. iron, pkgs	10	60
Iron, pkgs.	20	58
Arms, cs	3	200

British Guiana.

Ptlm. gals	10,000	1,125

Central America.

Mf. iron, pkgs	22	202
Powder, lbs	389	131
Sew. mach., cs	3	130
Ptlm. gals	3943	481
Hdw., pkgs	9	240
Tinware, pkgs	4	198
Cutlery, cs	3	71
Glass, bxs	12	37
Copper, bxs	1	48

United States of Colombia.

Ptlm., gals	10,795	1,624
Cutlery, cs	225	4,771
Glassware, pgs	146	1,104
Brit. ware, bxs	3	170
Mf. iron, pkgs	15	209
I. tubes	41	74
Nails, kegs	34	139
Anchors	12	69
Hdw., pkgs	183	3,136
Sew. mach., cs	126	3,798
Powder, lbs	1,319	324
Shot, pkgs	27	150
Ag. imp., pkgs	32	990
Revolvers, cs	1	140
Pumps, pkgs	6	74
Mach'y, pkgs	15	988

Brazil.

Hdw., pkgs	45	1,156
Cutlery, pkgs	57	1,267
Ag. imp., pkgs	10	143
Glassware, pgs	62	857
Pl'd ware, cs	3	541
Nails, kegs	20	51
Pumps, pkgs	9	371
Mf. iron, pkgs	60	412
Mach'y, pkgs	20	945
Sew. mach., cs	31	484
Ptlm., gals	58,567	6,649
Cars, bxs	4	670
Shoe nails, bxs	18	109

Japan.

Mf. iron, pkgs	86	1,369
Nails, kegs	660	1,604
Coal, tons	140	330
Iron safes	2	350
Glassware, pgs.	31	623
Hdw., pkgs	113	1,935
Ptlm., gals	500,500	57,383

Hayti.

Ptlm., gals	2355	340
Hdw., pkgs	10	77
Mach'y, pkgs.	3	319
Nails, kegs	98	67
Mf. iron, pkgs.	9	146
Cutlery, cs	5	62
Sew. mach., bx	1	9

Venezuela.

Ptlm., gals	15,450	1,784
Hdw., pkgs	11	183
Glassw're, pgs	21	107
Mach'y, pkgs.	15	466
Nails, kegs	2	8
Sew. mach., cs	17	585

Argentine Republic.

Ptlm., gals	50,000	5,687
Lub. oil, gals	120	18
Stove pol., cs	10	60

Havre.

Ag. imp., pkgs	1179	30,742
Lub. oil, bbls	55	1,379
Hdw., cs	11	847
Copper, cks	304	57,000
Mach'y, cs	5	800
Silverware, cs	1	1,100
Pl'd ware, cs	1	275
Ptlm., gals	570,193	47,883

Cuba.

Coal, tons	605	1,500
Ptlm., gals	24,000	3,063
Hoop iron, bdls	93	220
Sew. mach., cs	5	110
S. w. appr, cs	1	125
R.R.mtls., pgs	23	350
Hdw., cs	233	2,968
Glassware, cs	9	248
Mach'y, cs	25	530
Gas fixt., pkgs	3	360
Pumps, pkgs	27	1,800
Nails, kegs	356	721
Mf. iron, pkgs.	9	231

Mexico.

Ptlm., gals	11,200	1,466
Glassware, cs	117	1,679
Sew. mach. cs	53	1,066
Nails, kegs	23	151
Ag. imp., pkgs	38	996
Wire, bdls	12	137
Cartridges, cs	6	240
Tank	1	560
Hdw., cs	215	5,659
Mach'y, pkgs.	48	3,736
Cutlery, cs	111	4,995
Firearms, cs	15	1,414
Mf. iron, pkgs.	23	280
Nails, cans	12	91
Mach'y oil, cs.	15	98
Teleph'nes, cs	4	292
Pumps, pkgs	2	502
Tel. mtls., pgs	9	160
Revolvers, cs	1	1,138

Barcelona.

Hdw., cs	6	300
Ag. imp., pkgs	12	97
Glassware, cs	27	420
Ch'ndel'rs, pgs	25	383
Pumps, pkgs	5	338
Pl'd ware, cs	5	680

French West Indies.

Mf. iron, pkgs	3	52
Glassware, cs	10	287
Pl'd ware, cs	1	130
Sew. mach., cs	4	132
Ptlm., gals	2000	240

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending April 22, 1879:

Hardware.

Baldwin Bros.
Mdse., pkgs., 15
Copper rollers, cs., 3
Berbecker J. & Co.
Hdw., cs., 2
Blumenthal A. & S.
Mdse., pkgs., 4
Boker Hermann & Co.
Hdw., pkgs., 47
Brockner & Evans,
Galvanized wire netting rolls, 156.
Brown W.
Grindstones, 50
Brown Bros. & Co.
Iron wire rods, coils, 260
Cuhn J. W.
Hdw., cs., 1
Davis T.
Cannel coal tons, 109
Degraw, Aymar & Co.
Chains, cks., 1
Chains, lengths, 2
Mdse., pkgs., 6
Dougan Alex. & Co.
Hdw., cs., 1
Fisk, Clark & Flagg,
Hdw., cs., 1
Friedman & Lauterjung,
Steelware, cs., 3
Hayden Peter,
Mdse., pkgs., 1
Hecht Bros.
Mdse., pkgs., 8
Henderson Bros.
Mdse., pkgs., 86
Hermann H. & Co.
Mdse., pkgs., 19
Hildick A. H.
Chains, cks., 19
Chain cables, 2
Hill Edward,
Grindstones, 18.
Hopkins E. T.
Mdse., pkgs., 11
Howard, Sanger & Co.
Mdse., pkgs., 16
Lewis Bros. & Co.
Mdse., pkgs., 9
Lewis & Conger,
Hdw., cs., 2
Lichtenberg Chas.
Mdse., pkgs., 1
McCoy & Co.
Hdw., cs., 3
Mdse., cs., 1
Merchants' Dispatch Co.
Machinery, cs., 2
Milliken & Smith,
Wire rods, bdls., 945
Iron wire, bdls., 643
Moore's J. P. Sons,
Gun wads, cs., 5
Mullin Patrick,
Guns, cs., 1
Murdock Alex.
Hdw., cs., 1
Prosser Thos. & Sons,
Car wheel tires, 8
Ramsay C. G.
Plumbago, bbls., 207
Rogers Henry,
Mdse., pkgs., 2
Rose L. P. & Co.
Pumps, cs., 2
Saxton & Seabury,
Steel wire, cs., 9
Schoverling, Daly & Gales,
Guns, cs., 5
Schuyler, Hartley & Graham,
Guns, cs., 2
Taylor Thos.
Cutlery, cks., 1
Tillotson L. G. & Co.
Galv. wire, lots, 1224
Von Cleff & Co.
Ironware, cs., 5
Wallach A. & E.
Hdw., cs., 3
Ward Asline,
Mdse., pkgs., 6
Weingarten Edward,
Hdw., cs., 1
Wiebusch & Hilger Hdw. Co.
Cutlery and hdw., pkgs., 14
Wolff H. & Co.
Mdse., pkgs., 3
Wolff S. N. & Co.
Ironware, cs., 12
Steelware, cs., 1
Order,
Antimony, cks., 82
Blasting powder, cs., 20
Can'l coal, tons, 201
Castings, cs., 1000
Grindstones, 142
Grindstones, cs., 20
Hdw., bale, 1
Hdw., bdls., 40
Ironware, cs., 2

Iron.

Amsinck G. & Co.
Old iron, kilogs., 250,000
Drexel, Morgan & Co.
Ore, tons, 483
Lindberg Gustaf,
Bars, 38
Marvel Wm. D.
Ore, tons, 920
McCoy & Co.
Bundles, 4419
Naylor & Co.
Bars, 510
Perkins, Livingston & Post,
Kilogs., 32,000
Cases, 150
Cast iron, tons, 300
Robbins C. & Co.
Spiegel, tons, 200
Waite E. G.
Ore, tons, 360
Williamson Jas. & Co.
Pig, tons, 100
Order,
Bars, 410
Bundles, 495
Button iron, bxs., 50
Ore, bbls., 4
Ore, case, 1
Ore, tons, 420
Pig, tons, 100
Scrap, tons, 310
Sheet iron, bdls., 210
Spiegel, tons, 675

Steel.

Mosher H. M.
Cases, 10
Woodruff W. O.
Bars, 2
Bundles, 89
Order,
Bales, 24
Bundles, 80
Cases, 19
Casks, 35
Packages, 8

Metals.

Aikman J & Co.
Tin plates, bxs., 426
Bruce & Cook,
Tin plates, bxs., 1000
Byrne Jos. & Co.
Tin plates, bxs., 2485
Terne pl'ts, bxs., 100
Canadian Bank of Commerce,
Tin, slabs, 887
Dale John G.
Tin plates, bxs., 185
Heroy & Marrener,
Tin foil, cs., 7
Heuermann W.
Zinc dust, cks., 10
Hibbard, Spencer & Co.
Tin plates, bxs., 749
Naylor & Co.
Tin plates, bxs., 2447
Nevada Bank of San Francisco,
Tin plates, bxs., 1536
Peters & Tieman,
Quicksilver, bottles, 100
Phelps, Dodge & Co.
Tin plates, bxs., 8878
Antimony, cks., 50
Tin, slabs, 1250
Pratt Chas. & Co.
Tin plates, bxs., 503
Robbins C. & Co.
Tin plates, bxs., 850
U. S. Stamping Co.
Tin plates, bxs., 150
Windmuller, Louis & Roelker,
Sheet zinc, cks., 15
Order,
Ingot copper, cks., 4
Lead, pigs, 500
Tinned sheets, cs., 17
Tin plates, bxs., 21,091
Tin, slabs, 3156

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St.
PHILADELPHIA, April 22, 1879.

Pig Iron.—There is no change in the general condition of the market, although the comparative paucity of sales seems to be a matter of general comment. The time is believed to be at hand, however, when transactions may be on a larger scale, as the large lots purchased during the early part of the year are being rapidly consumed, and there are no indications of the demand for Iron products decreasing, but the reverse. There are already numerous inquiries, and for the immediate future the outlook for Pig Metal is quite encouraging. The real strength of the market is based upon the steady and increasing consumption which seems to extend to all departments of the Iron trade, so that, although the amount of current sales is not important, the furnaces are pushed to meet deliveries on former contracts. Stocks are pretty well exhausted everywhere, and sellers show no uneasiness about the future. Buyers appear to take considerable interest in the market, and would doubtless enter into new contracts if sellers evinced any disposition to meet them. For the time being, therefore, the market is quiet and feverish. One or two companies are offering to accept orders in a small way at inside figures, but the general disposition is to hold steady at full prices. We quote same as last week, viz.: Gray Forge, $16 @ $17; No. 2 Foundry, $17 @ $17.50; No. 1 Foundry, $18 @ $19.50. Bessemer Irons are in demand at full prices, but we hear of none being offered.

Muck Bar.—The market is rather quiet, but lots of 100 to 200 tons each are inquired for. Sellers are not numerous, and prices are firm as last quoted, viz.: $31 @ $32.50, Philadelphia delivery, according to quality.

Blooms.—The market is firm, and with a fair business doing, we quote as before: Sunken Scrap Blooms (2464 lb), $38 @ $39; Northern Ore Blooms (2240 lb), $33 @ $37; best quality Charcoal Billets (2240 lb), for wire and steel purposes, $58 @ $60; Bars do., $62.50 @ $65; Sheet Iron Blooms, cornered (2464 lb), $53 @ $55; Cold-blast Charcoal Plate Blooms, $50 @ $53; run-out Anthracite, $45 @ $47.50.

Structural Iron.—The amount of new business entered is not important, but there is a good deal of inquiry, and prospects of an active demand in the immediate future, The mills are fully employed on orders entered some time ago, and prices as a rule are firmly maintained. The consumption of Shaped Iron has been unusually heavy during the past few months, and indications in regard to the future are all of an encouraging character. We quote: Angles, 2.1¢ @ 2.3¢; Tees, 2.3¢ @ 2.4¢; Beams and Channels, 2.5¢ @ 2.7¢, according to specification.

Plate and Tank Iron.—The demand has been somewhat larger during the past week, one order for 1000 tons of Ship Plate having been placed, and numerous other smaller lots. The mills are full of work, but prices show no improvement, and orders have been taken at as low figures as were quoted some months ago. It is difficult to explain this feature of the trade; raw material is higher, business is more active and more encouraging every way, but sellers lack firmness and appear determined to take orders without much regard to price. The 1000 tons above mentioned is said to have been taken at 2.15¢, delivered, and in some instances we hear of lower prices in the higher qualities. Quotations are nominally unchanged, but concessions appear to be quite common in lots of any importance. We quote: Skelp, 1.9¢ @ 2¢; Common Plates, 2.2¢ @ 2.3¢; Tank Iron, 2.2¢ @ 2.4¢; C. No. 1, 2.4¢ @ 2.6¢; Shell Iron, 2.75¢ @ 2.9¢; Flange Iron, 3.7¢ @ 4¢; Solid Firebox, 4.85¢ @ 5¢, and Best Bloom, 5.5¢ @ 6¢.

Sheet Iron.—The demand has not been specially active during the week, but as the mills are liberally supplied with orders, a temporary slackness in the current demand does not affect the market. Manufacturers appear to have full confidence in values, and there is no disposition to accept business at any concessions from current quotations. We quote same as last week, viz.: Common Sheet, No. 20 to 23, 3.2¢ @ 3.3¢; No. 24 to 28, 3.4¢ @ 3.5¢; Best Refined Sheet, No. 25 to 28, 3.6¢ @ 3.7¢; No. 16 to 24, 3.4¢ @ 3.5¢; Best Bloom Sheets, No. 16 to 24, 5.5¢ @ 5.7¢; No. 25 to 28, 5.8¢ @ 6¢; Refined Plates or Blue Annealed, 5-16 to 16, 2.6¢ @ 2.7¢; Best Bloom, 5-16 to 16, 5.3¢ @ 5.5¢; A Patent Planished, 10½¢; B Patent Planished, 9½¢; Best Bloom Galvanized, 45 % discount; second quality, 55 %; extra discounts for large lots.

Bar Iron.—New business at outside quotations is difficult to obtain, but at medium rates the mills could fill up very speedily. There is a great demand for Bars, but the trade seems to hesitate on the question of prices, and it is doubtful if many orders have been entered at the nominal quotation. Manufacturers had entered orders for their customers to a considerable extent before the advance took place, so that the current demand has not been of an important character. These contracts are supposed to be running out, and the future seems to be one of much uncertainty. The fear of business going to Western mills prevents sellers being as firm as they otherwise would be, while the advance in Pig Iron seems to render it impossible for manufacturers to sell Bars at the old prices. This for the time being unsettles the market, and it is impossible to predict which side will have the advantage; although, if, as appears probable, consumption continues as at present, higher prices must be obtained to meet the increased cost of raw material. The low rates of freight are very much against Eastern manufacturers at present. The lateness of the season is another drawback, and the extremely disagreeable weather of last week is believed to have curtailed business considerably. With bright, seasonable weather, it is expected there will be a fair business done at reasonably satisfactory prices. We quote from 1.7¢ @ 2.0¢, according to quality, as the rates now current.

Steel Rails.—There is very little new business to report in rails, although buyers are sufficiently numerous to make an active market. Early deliveries are mainly what buyers ask for, but in the present condition of work at the mill it is impossible to meet these requirements. There is no difficulty about prices, and in fact concessions would be cheerfully made, if deliveries could be postponed to suit sellers' convenience. There is no disposition to force prices, but the tendency is rather the reverse, and is shaped with a view to obviate the necessity of foreign purchases. We quote $42 @ $44, according to location of mill, section of rail, and time of delivery.

Iron Rails.—There is a very active demand for Rails, and while buyers in some cases are well provided with funds, there is a noticeable increase of inquiries from parties who have nothing but wild-cat bonds to offer in exchange. This class of buyers meet with but little encouragement from manufacturers, the margin of profit being too small to permit of any risks being taken. The majority of the mills are well provided with orders, and for the reasons above named very little new business has been taken since date of our last report. Small lots are constantly changing hands, and prices are very firm at $34 @ $35.50, according to location of mill, section of rail, &c.

Spikes—Continue very active at former prices, viz.: 5½ x 9-16, 2¼¢; ¼ x 4 and longer, 2½¢; 7-16 x 4 and longer, 2.6¢; ⅜ x 3½ and longer, 3¢.

Old Rails.—There is nothing of special importance in the trade, but prices seem a little weaker, and $22, Philadelphia delivery, would no doubt be an outside figure. There is less inquiry, and buyers would require special inducements in the case of large lots. We understand that sales have been made at about $21.50 at Harrisburgh for several thousand tons, and a similar price for 2000 tons at Northumberland. Spot lots are scarce, and $22, the price named in a recent transaction, may be considered a fair quotation.

Scrap Iron.—The market is firm, and the full prices recently quoted are still maintained, say, Cast, $13.50 @ $15; Wrought, $22.50 @ $24.

Nails.—The price has been advanced to $2.25, and a steady demand is reported for small lots. Sales have been heavy since the first of the year, and stocks are said to be lighter than usual. The market is steady at the advance.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue,
PITTSBURGH, PA., April 22, 1879.

The fine weather of the past few days has infused a more cheerful feeling into business circles, and it begins to look as if the backbone of the winter had been broken. Such a protracted winter has not been experienced here for many years. In regard to trade generally, there is nothing particularly new to record. So far as relates to Pitisburgh, the situation is not very encouraging; indeed, our manufacturers generally seem very much discouraged. So far as the volume of business is concerned, there is not so much complaint, for the great drawback lies in the fact that, owing to a strong competition, resulting largely from an overproduction, there is no money being made, and some articles are being sold for less than actual cost. On the ordinary sizes of Iron and Nails there is no margin for profit and the same could be said of some other articles of Pittsburgh manufacture.

As stated in *The Iron Age* a few weeks ago, Pittsburgh is in better condition now, in the matter of rail transportation, than ever before. The completion of the Pittsburgh and Lake Erie Railroad having freed her from a discrimination that had lasted for years, and which did very much to curtail her business. A great deal of business was diverted from here to other competing points, the latter having the advantage of Pittsburgh in the cost of transportation.

There is still another matter, however, essential to the welfare of Pittsburgh as a manufacturing city, and that is cheaper skilled labor. The agreement between the puddlers and mill owners expires the 1st of June, and a number of the latter have most emphatically expressed themselves in regard to the matter, that they cannot and will not consent to a renewal of the present compact. What the result will be it is of course impossible to foretell, but unless the puddlers' union conclude to make some concessions, a lockout is almost inevitable.

Pig Iron.—There has been no particular change hereabouts during the past week. We can report a moderate demand for immediate consumption, but no change in prices, although producers generally are hopeful of an early advance, and some of them allege that if there is not, they will blow out as soon as they have completed existing contracts. That a stronger feeling exists there is no doubt, and some brands are being held and sold at an advance of from 50¢ to $1 ℔ ton, as compared with the first of the year, but it is well to bear in mind that these brands sold down lower than almost any other, so that there has, as yet, been no actual advance. Stocks, both in hands of consumers and producers, are light; the former, as a rule, have been buying all the year only to supply immediate wants, not carrying two to three months' stock, as was customary a few years ago, while many of the latter have not been doing anything for some time past, and those in blast are working on contracts; very few of them have piled up any this year, and this is a favorable feature to the producing interest. Coke irons are firmer, and some holders are asking an advance of from 50¢ to $1 ℔ ton, but as yet very few sales have been made at any improvement. We quote at $16 @ $16.50, cash, and $16.50 @ $17, 4 mos., most of the sales at the inside quotations. Bituminous Coal Smelted Irons, $19 @ $20, 4 mos., for Foundry, and $17.50 @ $19.50, 4 mos., for Mill, the latter figure for best brands of Red-short. Bessemer Iron is quotable at $21.50 @ $22, 4 mos., with some small sales at quotations, but the largest buyer here has not paid above $20.50, 4 mos. In the Shenango and Mahoning valleys $20, cash, at furnace, appears to be the ruling figure, equivalent to $21.50 delivered here. Charcoal Irons continue very dull, with no change in prices. Blooms are quotable all the way from $45 to $55, 4 mos., according to quality.

Manufactured Iron.—There is a fair business; some of the mills are quite busy, unable to keep up with their orders, but there is no improvement to note in prices. We continue to quote upon a basis of 1.70¢ @ 1.75¢, 60 days, for Bars, for assorted orders of good stock, and one-half to one-tenth for poorer qualities. We continue to hear of very low sales, deliverable at Chicago and other points in the West, but we are inclined to doubt their correctness, as the prices named do not cover actual cost at mill.

Nails.—There has been no particular change in the situation during the past week; business here is almost at a standstill, with but little prospect of any immediate change for the better. This important interest, so far as Pittsburgh is concerned, is in worse condition now than ever before in the history of the trade. Current rates do not more than cover actual cost of Nail Plate, losing the maker the keg, cost of cutting, packing and some other incidentals unnecessary to mention, and our manufacturers have very sensibly concluded to abandon the business in preference to working at a losss. At Wheeling the most of the factories are in operation, and they are reported as having a demand for about all they can make, but they do not pretend to be making any money; and, as the cost of production there is fully as much as it is here, it is difficult to see how they can hold their own. It is evidently the desire of Wheeling to monopolize the nail business, hence the Wheeling manufacturers are hopeful that even if they have to work at a loss for a time they will have it all to themselves after a while. The price there is $1.90, 60 days, 2 per cent. off for cash; in Pittsburgh there is no price.

Horse and Mule Shoes.—There is a fair business, but no change in prices; 100-keg lots, 3¼¢ and 4¼¢.

Railroad Spikes.—There is a continued steady demand, and the recent advance is fully maintained, 2¼¢ ℔ lb, 30 days.

Steel.—We can report a continued steady demand; the mills are all busy, some of them, although working to their full capacity, are unable to keep up with their orders. The fears entertaind some time ago that the capacity was being increased too rapidly, are not likely to be realized in view of the constantly increasing consumption, the growth of which within the past few years is really wonderful. Prices are firmer, possibly, but unchanged.

Rails.—Steel Rails are still quoted firm at $44, cash, delivered free on cars in Pittsburgh; and the Edgar Thomson Co. is obliged to decline all orders for delivery this side of September, having contracts for all they can make up to that time. Old Iron Rails are quoted steady at $22 @ $23, for immediate delivery, but the offerings for future delivery are increasing, and it is probable that contracts could be made for summer delivery at $1 per ton under our quotations. The effect of a lockout would be to increase the demand for Old Rails.

Wrought Iron Pipe.—There is an increasing demand for some kinds of pipe, but prices continue very unsatisfactory. The Lap-Weld Association has collapsed, and the market for lap-weld pipe is now open. There is usually an increased business at this season, and if prices were better there would now be no cause of complaint. Discounts on Steam, Gas and Water Pipe, 65% @ 70%; Boiler Tubes, 47½% @ 70%; Oil Well Casing, 75%, net; do. Tubing, 18% @ 20%, net.

Scrap.—There is a fair business and prices are firm, being low here, relatively, as compared with cost at sources of supply. We quote: Old Car Wheels at $20 @ $20.50, gross; do. Old Castings, $14.50 @ $15; Cast Borings, $10.50 @ $11; Wrought Turnings, 70¢ @ 75¢ ℔ 100 lbs.; Wrought Scrap, $1.05 @ $1.10; Boiler Scrap, $1.10 @ $1.15; Car Axles, $1.35 @ $1.40; Car Springs, $15; Old Steel Rails, $24 @ $25.

Window Glass.—There is a continued fair business. Some of our manufacturers are quite busy, and prices are steady at 75 and 10 per cent. discount for carload lots. At the meeting of the Western Association, which took place last Wednesday, there was nothing done of interest to the general public. It was intended to take some action looking to an equalization of freights, but nothing definite was accomplished. It appears to be the desire of manufacturers to make just as few changes as possible.

Coke.—The miners have generally resumed work, and that, too, at the old rate for mining. The Coke manufacturers were determined that they would not pay the advance, as they could not put up the price of Coke in view of the depressed condition of the Iron business, and the miners very sensibly concluded that to continue the strike would be folly. We continue former quotations, $1.15 @ $1.25 ℔ ton, delivered free on board cars at works.

Coal.—During the past week a considerable quantity was shipped down the river, and as the miners are pretty generally at work there will be a good deal ready for the next rise. Operators hope to get their contracts filled before the low-water season sets in, and this done, a general suspension is not improbable, as they say they cannot afford to pay the current rate—3¢ ℔ bushel—for mining, and compete in the down-river markets with other Coals.

Petroleum.—Business continues dull—unusually so for the season of the year—and prices are exceedingly low. The production of the raw article continues heavy—45,000 to 47,000 barrels per day—while the visible supply is the largest in the history of the trade, and is estimated at over 6,000,000 barrels. It looks now as if the bill pending in the Legislature to tax all new wells will pass, and if so, a decreased production will be the result.

CLEVELAND.

CLEVELAND, April 22, 1879.

Iron Ore.—As has been anticipated in these reports, the scarcity of Ores for immediate delivery is now fully at hand. The weather continues cold and cloudy and the opening of navigation is retarded. The ice is reported to be solid in the Straits, and was still forming at last accounts. There is no Bessemer Ore to be had for immediate delivery. Some of the furnaces making Bessemer Iron are short of supply. Every thing depends upon the new stocks, to arrive only when the Straits open. Prices are very firm, and some of the companies, having more to sell than already contracted for, are contemplating the policy of holding off for higher figures. These are, of course, confident of the short supply to come out of the Lake Superior district this season. Some Hematites have been sold since last writing, and at prices ranging from $4.50 to $4.75, but offerings in this grade of Ore are very light.

Pig Iron.—There is an increased activity in Pig Iron since last week. The demand for all grades is much better. Trade in Foundry Irons is brisk, and a number of furnaces making the best grades of strong Foundry Iron are refusing orders on account of being sold ahead. Mill Irons are only fairly active. Charcoal Iron is in better demand than at any time within the past five years. Some grades of it are scarce and unobtainable in quantity. The price is not usually much higher, but the tone is better in every respect.

Bar Iron and Nails.—The same condition continues in Manufactured Iron—sharp competition, and prices as low or lower than any point reached during the depression. The trade is so cut up that rates are hardly quotable.

Scrap Iron.—Scrap is still in good demand, but prices, in sympathy with Bars, are weakening.

ST. LOUIS.

ST. LOUIS, Mo., April 19, 1879.

Business generally is seasonable, but not more than ordinary. Southern buyers of general merchandise are here in considerable numbers, but are not buying as heavily as usual. Money is plentiful, and the demand for it is weak, at an average of about 7 per cent. for commercial purposes. Banks are large holders of 4 per cents., preferring that investment for their money to idleness. Real Estate shows no activity; building, however, is very active. All this tends to prove that commercial matters show no new or enterprising features, and that what little improvement there is to be must come slowly, but perhaps surely.

Pig Iron.—There is nothing new to report in the way of prices nor in the condition of the market. Because of the low freight rates incident to the railroad war, considerable quantities of Iron are shipping to Western points.

Missouri Charcoal	$19.50	@ 20.00
Southern "	19.00	@ 20.00
Hanging Rock	21.00	@ 22.00
Southern Coke, No. 1	18.50	@ 19.50
" " No. 2	17.50	@ 18.00
" " Mill	16.50	@ 17.50
Ohio River, No. 1	19.00	@ 21.00
Jackson County	19.50	@ 20.00
Hocking Valley	19.00	@ 20.00
Cold-blast Missouri	25.00	@ 30.00
" Southern	25.00	@ 30.00
" Ohio	30.00	@ 32.00
Ores, Iron Mountain	5.50	@ ....
" Southwest	4.75	@ ....

Old Rails—Likewise occupy about the same position as they did last week, while Old Car Wheels are coming in in limited quantities and are meeting but a light demand.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts.,
CHATTANOOGA, April 21, 1879.

The weather for the week has been variable, beginning warm and ending with winterish coolness, without frost, however. General trade has been fair. Manufacturers are active, but business in their products is comparitively dull. There has been no falling off in prices, because the sluggishness of the market is regarded as of only temporary duration.

Pig Iron.—There is nothing new to report. Sales for the week light, but no sign of weakening our quotations. Coke Irons—No. 1 Foundry, $17.50 @ $18.50; No. 2, $16 @ $17; Gray Forge, $14 @ $15. White and Mottled $12 @ $13. Hot-Blast Charcoal—No. 1 Foundry, extra, $20 @ $21; ditto, $18 @ $20; No. 2 Foundry, $16 @ $18; Gray Forge, $16 @ $18; White and Mottled, $15. Cold Blast Charcoal—Car Wheel Metal, $22.50 @ $27.50; do., Extra Standard, $24 @ $29.50; Forge, $17 @ $22.

Muck Bar.—$27 @ $34. Old Rails, $18 @ $18.50. Old Car Wheels, $18. Wrought Scrap, $17 @ $19.

Ores.—Brown Hematite, 50 to 56 %; per ton, $1.75 @ $2.25. Red Fossiliferous, 50 @ 56 %; per ton, $1.20 @ $1.60. The above prices for ores delivered in Chattanooga on cars, or on the wharf from flat boats.

Nails.—There is no improvement to note. The mills in the district are running up to their capacity and selling their product at a small profit. The Western Association, we notice, is moving in the matter of readjusting the prices of their labor on a lower basis. But no cut on labor will avail, while many of those mills pursue the business methods they have for a year and more past. We quote at $2.25 rates, usual discount on job lots.

Manufactured Iron.—Trade is without interest, though prices are fully maintained. One mill here has been idle during the week for repairs. We quote: Bars, 2¢; Railroad Spikes, 2.50¢; Light Rail, 2.25¢; Track Bolts, 3¢; Trestle Bolts, 4¢.

Coke.—We quote 11¢ @ 15¢ per bushel for washed foundry. Furnace full supply at $2 per ton, free on cars at Chattanooga or South Pittsburgh.

Coal.—There is no change in the market nor in prices. We quote run of mine, free on cars in Chattanooga, at $1.25 @ $1.75 ℔ ton. Lump, as per quality, 10¢ @ 12¢ ℔ bushel.

Pig Lead—4¢. Ingot Copper, 18¢.
Iron Rails.—We quote at $35 ℔ ton.

BOSTON.

APRIL 18.—*Pig* continues fairly active, but there seems to be no further tendency toward an advance. At the shipping ports Foundry No. 1 is still held at $18 @ $18.50; No. 2 at $17 @ $17.50, and Gray Forge at $16.50. Manufactured iron is steady. Sheet Iron continues to sell at 2⅞¢ @ 3¼¢ for Common. Russia Sheet sells at 11¢ @ 12¢. Nails are selling at $2.25 ℔ keg. *Copper* is a trifle steadier at the close, but we continue to quote 16¢ @ 16¼¢ for Lake. For manufactures we quote: New Sheathing at 22¢; Braziers, 24¢ @ 26¢; Yellow Metal Sheathing is held at 12½¢ @ 13¢ for English, and 13¢ @ 14¢ for American; Yellow Metal Bolts, 18¢. *Lead* is again lower. We quote: Pig, 3½¢ @ 3¾¢, currency; Sheet, 6½¢; Pipe, 6¢; Tin-Lined Pipe, 12¢; Bar Lead 6¢; all of these excepting Pig are subject to the usual trade, or 10 % discount. *Antimony* is in light demand, but is steady, and we quote 13¢. *Spelter* is dull, being held at 4¼¢ for the various grades. *Tin.*—Large lines of Straits may be quoted at 15¢ @ 15¼¢, and smaller lots as below. The Billiton sale of 25,000 pigs was held at Batavia on Monday. The market was stronger, the price obtained being equal to 15½¢ laid down here. Singapore cables $21.70 ℔ picul, and London £69. 10/ @ £70. The bark Beatrice Havener, from Singapore, brought 1444 slabs Tin, Cyrus Wakefield & Co. Tin is firm. Refined English is scarce and higher. We quote: Straits, 15½¢ @ 15¾¢; Banca, 20¢; English, L. & F., 15½¢ @ 15¾¢. We quote Plate: Charcoal, I. C., $6.75 @ $7; Coke, $5.25 @ $5.75; and Charcoal Terne, $6 @ $7.75.—*Commercial Bulletin.*

BALTIMORE.

Mr. W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of April 21: Trade improved considerably last week, and business may be said to be fairly active for the season, with values firm and unchanged at annexed figures:

Refined Bar Iron, 1 to 6 by ⅜ to 1	℔ lb	1.90	@ 2 ¢
" " 1 to 4½ by 1⅛ to 2	"	1.90	@ 2 ¢
" " ¾ to 2, Round and Square	"	1.90	@ 2 ¢
Hoop Iron, 1¼ wide and upward	"	1.90	@ 2 ¢
Band Iron, from 1¼ to 4 in. wide	"	2¾	@ 2¾¢
Horse-shoe Iron	"	2¾	@ 2½¢
Norway Nail Rods	"	3	@ 3½¢
Black Diamond Cast Steel	"	4¾	@ 5¼¢
Machinery Steel	"	12½	@ 13 ¢
Cast Spring Steel	"	7	@ 8 ¢
Homogeneous Steel Plate	"	4¾	@ 5¼ ¢
Common Horse Nails	"	5	@ 5½¢
R. R. Spikes, 5½x9-16	"	10	@ 14 ¢
Perkins' Horse shoes, ℔ keg of 100 lbs		2¾¢	@ 2¾¢
" Mule shoes		$3.37½	@ 4.37½

Putnam Horse Nails	℔ lb	10	9	8	7	6
Globe Horse Nails	℔ lb	18	19	20	21	23¢

Less list discount to the trade.

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of April 21: The demand for Iron continues fair and prices unchanged. We quote:

Baltimore Charcoal Wheel Iron	$26.00 @ 28.00
Virginia " "	27.00 @ 30.00
Anthracite No. 1	19.00 @ 20.00
" No. 2	18.00 @ 19.00
" No. 3	17.00 @ 18.00
" Mottled and White	13.00 @ 14.00
Charcoal, C. B. Blooms	50.00 @ 52.00
" Billets	52.00 @ 55.00
Refined Blooms	45.00 @ 50.00

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of April 21, write us as follows: There has been no change in the market since our last report. The demand is very light, but furnaces generally having sold largely ahead, are not pressing sales, and prices are without change. The usual time, 4 mos., is allowed on the quotations below:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$21.00 @ 22.00
No. 2 " "	19.00 @ 20.00
No. 1 Southern, Charcoal	19.00 @ 20.00
No. 2 " "	17.00 @ 17.50
No. 1 Hanging Rock, Stonecoal and Coke	19.50 @ 20.00
No. 2 Hanging Rock, Stonecoal and Coke	18.50 @ 19.00
No. 1 Southern, Stonecoal and Coke	19.00 @ 19.50
No. 2 " "	18.00 @ 18.50
"American Scotch"	18.00 @ 19.00
Silver Gray	17.00 @ 18.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neut'l	16.50 @ 18.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	17.00 @ 17.50
No. 2 Stonecoal and Coke, Cold-short and Neutral	16.50 @ 17.00
No. 1 Missouri and Indiana Red-short, White and Mottled, Cold-short and Neutral	20.00 @ 21.00 / 15.50 @ 16.00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast	30.00 @ 32.00
Alabama and Georgia, Cold-blast	28.00 @ 30.00
Kentucky, Cold-blast	27.00 @ 30.00

W. B. BELKNAP & Co., Iron and Steel merchants, Nos 113 and 115 West Main street, under date of April 21, report only a moderate degree of activity in the Iron market. While there is no change in nominal price of either Pig or Bar, the tendency is manifested by the improvement in various manufactures of Iron. The advance in many articles, such as nuts, washers, vises, rivets, &c., seems general and well maintained. The evident purpose of the Pittsburgh mills to make a stand for a lower scale of wages can hardly fail to have a hardening effect upon the Iron market, in view of probable resistance by the men and consequent cessation of operations. It is not certain whether the mills of the lower valley will be inclined to join in this effort, as by virtue of a lower sliding scale they are now paying less for puddling than Pittsburgh. At the same time the wages of puddlers throughout the West are extravagantly high as compared with other departments of skilled labor, and a general concert of action may be deemed advisable to remedy the evil.

CINCINNATI.

Messrs. E. L. HARPER & Co., under date of April 21, write us as follows: There is no material change to note in the market. Prices remain unchanged. There is a fair demand for all grades, and while there does not appear to be any excess of supply, it is amply sufficient to meet present requirements. No change in prices;

HOT-BLAST FOUNDRY.

Hanging Rock C. C., No 1	$21.00 @ 22.00
" C. C., No. 2	19.50 @ 20.00
Hanging Rock Coke and S. C., No. 1	17.50 @ 20.00
" " S. C., No. 2	15.00 @ 17.00
Virginia Coke, No. 1	19.00 @ 20.00
" No. 2	18.50 @ 19.00
Shawnee Am. Scotch, No. 1	20.00 @ ...
" S. C., No. 2	17.00 @ 18.00
Hocking Valley S. C., No. 1	19.00 @ 20.00
" S. C., No. 2	17.00 @ 17.50

FORGE IRONS.

Hanging Rock, No. 1 C. C.	19.00 @ 19.50
Hanging Rock, No 1 Coke	17.00 @ 17.50
Longdale, No. 1 Coke	18.00 @ ....
Ala. and Tenn. No. 1 C. C.	17.50 @ 18.00
Red-short, No. 1 Coke	18.50 @ 19.50
Cold-short, No. 1	15.50 @ 16.00
Old Rails, prime	cash, ... @ ....

CAR WHEEL AND MALLEABLE.

Hanging Rock C. B.	28.00 @ 30.00
Cherokee C. B.	28.00 @ ....
Southern and Western Brands	26.00 @ 28 00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of April 21: About 150 tons Foundry Pig and 300 tons Gray Forge have been taken at quotations by our mills and foundries the past week

American Scotch Pig Iron	$21.50 @ 22.50
Anthracite, No. 1	20.00 @ 21.00
" No. 2	18.00 @ 19.00
" No. 3	17.00 @ 18.00
" Mottled	14.50 @ 15.50
Coke, No. 1	19.00 @ 20.00
" No. 2	18.00 @ 19.00
" No. 3	16.50 @ 17.50
Va. Cold-blast Charcoal, Cold-short	20.00 @ 23.00
Va. " " Neutral	27.00 @ 28.00
Va. Warm-blast " Cold-short	18.00 @ 21.00
Va. " " Red-short	17.00 @ 18.00
Old Rails	18.50 @ 19.50
Wrought Scrap No. 1	17.50 @ 19.00
Cast " (machinery)	15.00 @ 16.00
Richmond Refined Bar Iron	2c. @ ....
Horse Shoes per keg	... @ 4.00
Mule " "	.... @ 5.00
Old Dominion Nails, Standard Size, per keg	2.25 @ ....

Freights to Philadelphia, $1.40 per ton of 2240 lbs., by sail.

Freights to New York, $1.60 per ton of 2240 lbs by sail.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., April 7, 1879.

THE IMPROVEMENT

in business, to which I have alluded in two or three of my most recent letters, is being rather closely discussed in commercial circles. There is, almost as a matter of course, some diversity of opinion on the subject, but it is gratifying and pleasant to learn that a large number of persons believe that a distinct revival is being inaugurated. They admit that the change is not yet pronounced or considerable, but they hail the existing outward and visible sign as a welcome token of that full and inner grace which they trust will speedily follow. Setting aside the information derived from the public prints and general commercial sources, I have been at some little trouble to ascertain private views from gentlemen in different parts of the country who are well qualified to speak in answer to my queries. In London there is little or no change in the iron trade, but some of the lighter industries are rather busier on export account. At Birmingham there is no upward movement in iron, but many of the miscellaneous hardware industrial concerns are better off. In other parts of the Black Country the leading houses are only a shade busier, but they report a great many inquiries. Manchester and Lancashire are slightly more hopeful, particularly in the engineering branches, which constitute so important a feature in that district and county. Sheffield is hardly any better, except as regards cutlery, which is moving off more freely, particularly to the United States. The Leeds and Newcastle engineering shops are somewhat livelier, and in Scotland the weekly output is more considerable. From travelers who have just been through the agricultural districts of the whole country, however, I hear extremely disheartening accounts—indeed, they report unanimously that there is no business whatever to be done and no money obtainable.

THE BRITISH FARMER,

indeed, is in a sore plight, and his condition has already been seriously discussed in both houses of Parliament. He is alleged to live more expensively and stylishly than his predecessors—to hunt, shoot and drink wines instead of the home-brewed ale with which his forefathers were wont to regale their frugal throats—and, generally, to have lately moved on a little too fast. His representatives deny that he has committed all the frivolities and errors laid to his charge, asserting that he is in reality the victim of circumstances, and especially of American competition. In the good old times, which the typical British agriculturist so strongly laments, bad harvests were compensated for by high prices, but since the breaking down of protective barriers there is no relief in that way, and it is utterly and entirely out of the power of the farmer to influence the market either in one or the other direction. Thus is the tiller of the soil environed with danger and trouble. If his landlord relieves him by a heavy reduction of rent, the relief is insufficient; hence the puzzle is what he is to do to have his very existence saved. He is recognized as being an honor to his country, a mainstay of the constitution and an exceptionally good fellow all round; yet he is not unlikely to be immolated for the good of the inhabitants of the large towns. His present sorry and impecunious state is a very serious matter for the manufacturing industries, seeing that he virtually represents the bulk of the home trade. His poverty prevents him from purchasing implements—iron fencing, tools and the like—and his inability to spend money naturally reacts in the most direct manner on the country shopkeepers of all ranks and trades. We cannot very well give him protection. We require American corned beef, canned peaches, salmon and all the rest, but by their use we cut his throat and prevent him from earning a remunerative livelihood. What then shall we do with him? Hitherto the query has practically remained unanswered.

FOREIGN COMPETITION

at home and abroad forms one of the main subjects of the contents of this week's *Ironmonger*, a journal which has apparently devoted itself in a great measure to the exact elucidation of the position in which British manufacturers now find themselves. American competition appears to be the most formidable to the home producer, although some of the reports allude to German tools, French hardwares and Belgian iron in respectful terms. There can be no doubt that John Bull has profited very considerably by his recent reverses in the various markets of the world, and that the raps administered to his fat knuckles by Uncle Sam, Johnny Crapaud and others have fairly awakened the old gentleman from his previous lethargy. For a time, as I have before remarked, we shall go on in a vastly improved style, but the return of prosperity will at once give us a fit of the gout. There are, it is true, plenty of the traders of the pig headed old school who pooh-pooh the idea of competition in any shape, and flatly deny that such a thing has any existence in fact. You may tell them that every-day experience contradicts their cross stupidity, and that it is practically impossible for Great Britain to retain its old monopoly; you may show them newspaper and private advices from any number of distant markets, speaking of the formidable inroads of American, German and French goods; you may tell them of the vast natural wealth and resources of the United States, and of the many advantages of Belgium, Germany and France in respect of wages and the hours of labor; all this and more will not convince these, and they will blindly blunder on to the end of the chapter in the full and comforting belief that we are impregnable, and that it is our heaven-born and natural mission to minister to the wants of all the world besides. I do not say that this class is a large one, but it is in many respects influential, and not infrequently cramps the well-meant efforts of younger and livelier spirits. We are somewhat astonished this morning by a cable message to the *Times* announcing an

AMERICAN ORDER FOR ENGLISH RAILS

at a price which is certainly good, even when the duty is taken into consideration. If we are to believe the cablegram, Mr. William H. Vanderbilt has purchased 12,000 tons of steel rails from an English house (not named) at the price of $35 per ton, delivered at one of your Eastern ports. The purchaser is reported to have made the contract because he "will get better value for his money, and will really get them cheaper, too." This, of course, may be all bogus—indeed the whole affair may be so—but assuming that all that is asserted is true, the circumstance certainly merits more than a passing remark. Some weeks ago, in commenting on the £4. 6/ contract given by the North-Eastern Company to Wilson & Cammell, of Dronfield, I took occasion to remark upon the significance of the figures and their importance to your manufacturers. I pointed out that with the quotation of $22, or thereabouts, at the works, English producers might be tempted to venture over the Atlantic and try conclusions with your rail-makers, especially as your quotations then ranged at nothing under $40 or $42 the ton. This combination of circumstances would seem to have come about with the result now under notice. I see that you do not understand how steel rails can possibly be made at anything like the price named, and that you express astonishment at the facts I named. Subsequently, I told your readers that not only could the thing be done, but that even at £4. 6/ a profit could be secured. That statement I made on the authority of a gentleman who has the reputation of being one of the best men in the rail trade. Since that period selling prices in the open market have gone up by 10/ or 12/6 a ton, but the facts remain the same, and I now, therefore, propose to go into some of them in detail, without further preface or apology. The figures I append will not, I admit, apply to many of the English works, inasmuch as some of them are not merely smelters of their own pigs, but have the rail mills close to the blast furnaces, and are, besides, on the coast and can deliver the finished product f. o. b. at the same prices as those given. Thus in the Dronfield case, we may assume the following as an approximate statement of the cost of production:

	£	s.	d.
Cost of hematite Bessemer pig on the West Coast	2	15	0
Railway carriage to Dronfield, Sheffield, per ton	0	7	6
Dead Charges—Say plant costing £50,000			
Management	2,000		
Salaries	2,000		
Total	£54,000		
For an output of 1500 tons weekly, or 78,000 tons yearly, amounting, roughly, to, per ton	0	2	0
Cost of spiegel, per ton	0	5	0
" fuel, " say	0	5	0
Charges for labor, the ingots being rolled direct from the converter without reheating, hammering or other intermediate process, straightening and punching included	0	10	0
Total cost, per ton	4	4	6

If this is correct, which in substance it is, we have a ready explanation of the selling price which has been the cause of so much comment. It is, of course, likely that in some cases the foregoing details may be inapplicable—pig may cost less and fuel more—but you may take it that at establishments such as Bolckow's, Wilson & Cammell's, Steel, Tozer & Hampton's, Barrow, Moss Bay, Dowlais, Ebbw Vale, &c., the cost is very little, if anything, outside what I have here set down. At Barrow, for instance, Mr. Smith takes the pig hot from the blast furnaces into the converters, and thence direct to the rolls. Drilling costs more than punching, of course, but where that is the case it is probable that the cost of the spiegel is less; indeed, I suspect that in the manipulation of this useful ingredient lies half—perhaps more—of the secret of success. More I need not say, save that formidable as this may appear, it is but a fleabite to that which may come about by reason of the new steel-making process of Bolckow, Vaughan & Co. Their invention—the use of common Cleveland pig ironworth about 36/ per ton, with a basic lining for the converter of lime and manganese—is alleged to be quite thorough and in good working order. We may therefore look for rails at something like £3. 5/ @ £3. 15/ per ton before long!

SCOTCH PIG IRON

opened in good form last week, so that William Colvin & Co. on Wednesday reported an extensive demand in the warrant market, although makers' brands were quiet. Later on, however, warrants dropped and closed rather easier, and makers' iron was slower, owing to smaller shipments. There are 237,177 tons in Connal's stores, against 170,457 same date last year. The total increase in Scotch pig iron shipments this year has been 20,381, while the decrease in the importations from Cleveland has been 10,397 tons. Writing from Glasgow, April 1, James Watson & Co. said: "The warrant market has been dull during the past week, with very little change in prices, a limited business being done between 42/9 and 42/5½ per ton, cash, closing to-day with buyers at the latter figure and sellers at 42/6 per ton. The shipments last week were 9463 tons, as compared with 11,499 tons for the corresponding week of 1878." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	43/	41/6
Gartsherrie, "	47/9	43/9
Coltness, "	50/6	45/
Summerlee, "	46/	43/
Langloan "	49/6	43/9
Carnbroe "	44/6	43/6
Calder, at Port Dundas	47/9	43/6
Glengarnock, at Ardrossan	46/6	43/
Eglinton, "	43/	42/
Dalmellington, "	43/	42/
Shotts, at Leith	49/	44/9

IN CLEVELAND

the great topic of conversation is naturally the new steel-making process of Bolckow, Vaughan & Co., and its probable effects on the future of the district. There was a large assemblage of practical men, as well as sightseers, at the works of that company on Friday, when the invention was practically demonstrated and put to the test, with every success. Such being the case, the ironmasters of North Lincolnshire and Northamptonshire (where the ores closely resemble those of Cleveland in many important particulars) are on the *qui vive*, and entertain hopes of a brighter future than any they had previously ventured to predict for themselves and their localities.

THE RAIL TRADE,

it is worthy of remark, is quite stiff, so much so, indeed, that some of the companies are inquiring as to future deliveries. They are met by the assurance that no forward contract can be booked at present figures, and that the end of the year will almost certainly see prices at or nearly £6 per ton all round. The Highland Company, of Scotland, I may say, have ordered 5000 tons from the West Cumberland Co., and the Moss Bay Co. (not the Ebbw Vale Co., as stated in my last) have taken a contract for 11,000 tons from the Milan (Italy) railways.

AT SHEFFIELD

I hear there is a slight change for the better, probably an alteration which most people will for some time endeavor to decry and hide. I am told, however, that one old steel house has put its men on *eight* days per week, and that one or two others are in receipt of orders sufficient to enable the melters to make more time than has of late been the the rule. Some of these orders result from a little spurt in the engineering branches, while others emanate from certain new foreign markets, of which Brazil is one. An experienced Sheffield traveler who has just been through Lancashire and Staffordshire, writes me that there is a decided change for the better in several quarters, particularly in the neighborhood of Manchester. On the other hand, losses of business are reported to have arisen from the stupidity of the trades unions. One particularly glaring case is that of the Yorkshire Engine Company, which was offered an order for 32 locomotives at £2000 each, but was unable to accept it owing to the union forbidding the men from making the concession in wages which would have enabled the company to take the contract. The men were individually and collectively willing to meet the company, but the union nabobs decided that they must on no account submit to the slightest reduction! Mr. Ward, of Ward & Payne's, is now running a similar gauntlet, but he says he has already achieved a virtual triumph, and that he is determined to be master in his own place. Mr. Ward lives in happy times; a dozen years ago Broadhead & Co. would have blown up his works for his temerity. Files are cut very low—in the manner mentioned by me last week.

THE QUARTERLY MEETINGS

to be held at the latter end of this week are scarcely likely to bring about any material alteration of prices, which are now declared to be at their lowest. It is likely, then, that marked bars will remain at £7. 10/; common bars, £6; Lord Dudley's, £8. 2/6; cable iron, £8; rivet iron, £7. 15/; nail rods, £6 @ £7. 10/; hoops, £6. 10/ @ £7. 10/; sheets, £6. 10/ @ £7. 15. Tube strips, £7. 15/ @ £8, and other kinds in proportion. All the general run of iron sells slowly, but for a few of the best brands there are larger commissions afloat. Hardwares are in fair request, especially for the West and East Indian, South American and Southeast European markets. Prices are quite easy all round.

PRICES OF NAILS

in the Cleveland district at present are officially stated to be as follows:

Wire Nails.

English, kegs extra, No. 6 f. o. b.	11/0
" " No. 10 f. o. b.	15/0
" " No. 14 f. o. b.	18/0
Foreign, kegs extra, No. 6, free Thames	10/6
" " No. 10, "	13/6
" " No. 14, "	16/6

Middlesboro Cut Nails.

¾ in. clasp, rose, clout, tip, and sacking per cwt.	18/0
⅝ in. ditto	16/6
1 in. "	15/0
1¼ in. "	12/6
1½ in. to 1¾ in. ditto	11/0
2 in. to 2¼ in. "	10/0
2½ in. to 2¾ in. "	9/6
3 in. to 6 in. "	9/0
Above 6 in., 1/ per cwt extra.	
1 in. joiner's brads	17/0
1¼ in "	15/6
1¼ in. "	14/6
1½ in. to 1¾ in. ditto	13/0
2 in. to 2¼ in. "	12/0
2½ in. to 2¾ in. "	11/6
3 in. and above, "	11/0
2 in. flooring brads	9/3
2¼ in. "	9/0
2½ in. and upwards, ditto	8/9
¾ in. lath nails	15/0
⅞ in. "	13/0
1 in. and above, ditto	12/0
2 in. to 2¼ in. colliery plate nails, of first-class scrap, warranted	11/0
2½ in. to 2¾ in. ditto	10/6
3 in. and upwards, ditto	10/0

In other districts the quotations are close to these, although those of each maker differ a few pence.

SOUTH WALES AND MONMOUTHSHIRE

are in some respects busier, but the iron and steel works are, for the most part, quiet. From Cardiff last week only 350 tons of iron were sent off. The total included, however, 30 tons of wire for New York, and to the same destination 200 tons of tin plates were also sent off. At Ebbw Vale rails are being rolled for Brazil and elsewhere. From Newport 650 tons of railway iron went to Philadelphia and 806 tons to Rio de Janeiro. The tin-plate makers talk of further restriction. On this head Messrs. W. S. & N. Caine, of Liverpool, say: "The lull in buying to which we referred in our last circular still continues, and, in consequence, the market has suffered to some extent. A few unimportant makers, finding themselves short of work, have been obliged to press for orders, accepting reduced prices, and the effect has been distinctly felt, both here and in America. The number of makers in this position is, happily, a very small proportion of the whole, and those who expect to buy the older and finer brands at under full rates run the risk of being disappointed. With a view to counteract the first appearance of weakness, an important meeting was held at Swansea last week, which was attended by about seven-eighths of the makers, when resolutions were unanimously passed fixing the price of common cokes at 17/, and if, by next quarterly meeting, which takes place on the 9th inst., no improvement in demand is noticeable, a further curtailment in production will probably be made, by reducing the working time from four to three days a week. Although this smacks of weakness, it also indicates a laudable determination on the part of makers to maintain prices at a paying point, and if all dealers would but act in the same spirit, the object would be easily accomplished. As the opening of navigation approaches and the spring demand comes on, orders will become more plentiful, and it is fully expected that at quarter day, if not before, we shall see considerable buying, accompanied by a hardening of prices."

THE METAL MARKETS

are steady; in some respects a trifle stiffer. The *Ironmonger* reports: "*Copper* has been steady on the week at £55. 10/ @ £55. 15/ for good ordinary brands of Chili bars on spot; £57 @ £57. 10/ for arrival; £64 @ £64. 10/ Wallaroo; £63. 10/ Burra; £61 @ £61. 10/ English Tough; £62 @ £63 best selected, and £66 strong sheets. The charters from Chili for the second half of March have been telegraphed as 2000 tons, viz., 750 tons of bars and ingots, 650 tons fine in furnace stuff for U. K., and 600 tons bar for the Continent. The statistical position of this metal on April 1 was as under: Stocks, Chili ores and regulus, Liverpool and Swansea (equal to fine), 4435; Chili bars in Liverpool, 20,753; ditto in Swansea, 2957; foreign copper (chiefly Australian) in London, 6543; ditto landing, 215; English copper in London, 50; Chili bars and ingots and Barilla in Havre, 4563; other copper in Havre, 300; making total stock, 39,816 tons. Afloat chartered, from Chili to Europe (advised by mail)—Ores and regulus (equal to fine), 2876; bars and ingots, 6399. Afloat from Australia (advised by mail)—Fine copper, 1953. Afloat and chartered from Chili to Europe (advised by cable)—Fine copper, 2700. Grand total, 53,744 tons. *Tin* opened easy, but closes rather steadier on the basis of £68. 5/ @ £68. 10/ for fine foreign on spot, and £68 to arrive, with £69 for English ingots. The statistical position of tin on April 1, was as follows: Straits and Australian, spot, 9763; ditto ditto, landing, 298; Straits, afloat, 650; Australian, afloat, 703; Banca, on warrants, 2052; Billiton, spot, 2101; ditto, afloat, 1050; Australian tin in Holland, 297; total visible supply, 17,914 tons. Deliveries during month have been, in London, 1054; in Holland, 630; total deliveries, 1684 tons. Shipments from Straits in March, 1879, 425; do. from Australia, 700 tons; during three months, ending March 31, 1879, shipments from Straits to London, 1450; shipments from Australia to London, 1868; deliveries of foreign tin in London, 3304; Banca in Trading Company's hands and afloat, 1463 tons. *Tin Plates* are fairly upheld in price; indeed, there is a rumor that the manufacturers are about to hold another meeting at Gloucester for the purpose of discussing a proposed further reduction of the make. The American market continues to furnish heavy orders for these goods, although the native manufacturers (now three in number) are offering special sizes and superior grades to consumers. *Lead* rules at £14. 17/6 @ £15. for English pig, and £14. 12/6 @ £14. 15/ for soft Spanish without silver. The extraordinary production of this metal on the Pacific coast of America is so great that there seems but little chance of any considerable upward change in prices at present. The lead mining industries of Derbyshire, Wales, Cumberland, &c., are in a depressed condition. *Spelter* is a trifle dearer at £15 @ £15. 5/ for ordinary brands. On April 1, the stock in London was 211 tons; in Hull, 1194 tons, and at Grimsby, 375 tons; a total of 1780 tons, against 1734 tons on March 1, and 1108 tons on the same date of 1878. *Zinc* remains at last week's rates, £19 @ £19. 5/ for rolled. *Quicksilver* is quoted £6. 2/6 per bottle, with a quiet demand, and *Antimony*, £46 @ £47."

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, April 6, 1879.—*Metals.*—The business aspect continues to improve, the more so as accounts from the agricultural regions are also more reassuring. *Copper* has been doing tolerably well, and we now quote: Chili Bars, 155 francs; Common ditto, 150; Ingots and Slabs, 153.75; Best Selected, 158.50, and pure Corocoro Ore, 157.50. Havre has remained quiet; they quote first brands Chili Bars, 150 @ 151.25, and Common ditto, 146.25 @ 148.75. Copper is well held at Marseilles, where they quote: Spanish, 145; Tokat, 150; Refined Ingots, 160; Sheathing, 180; Bolts, 187.50, and Yellow Metal Sheathing, 180. *Tin.*—The Paris market has been rising, though inactive. We quote: Banca, 192.50; Billiton, 190; Straits and Australian, 182.50, and English, 177.50. Marseilles is steady, and quotes Banca, 190; Straits and Billiton, 180, and English, 185. *Lead.*—This metal is well upheld here at 38 @ 38.50. Havre remains unaltered at 37.50 @ 38. Marseilles is firm; they quote First Fusion, 37; Second Fusion, 35, and Manufactures, 41 @ 42. *Spelter.*—There is little doing, but great firmness. We quote 39.50 @ 40, and Havre quotes 41 @ 42. Marseilles is quiet and nominal. Sheet Zinc there, 53 @ 54.50; Old Remelted, 40. *Iron.*—There is more improvement noticeable in the demand for Iron for architectural purposes, Iron for flooring having risen slightly in consequence. The present quotation is 155 @ 157.50. Merchant Iron remains depressed. In the Haute-Marne ornamental Ironwork is in good request; common castings are steady. The same relates to Pig Iron and to all sorts of machinery. Wrought Iron specialties are neglected. Iron Wire, Chains and Nails are sustained. In the Meurthe and Moselle, Pig Iron, according to brand, sells between 51 and 52. They pay, Second Fusion, 68 @ 70. At the North matters are looking up, but prices are slow in improving, and Wrought Iron ranges between 135 and 137.50. The Denain and Angin Works have come to the resolution rather to curtail production than subscribe to prices so very unremunerative. Flooring and Merchant Iron is, however, better situated in that region than it has been hitherto, and this rather augurs well. The orders received at Montalaire, Oise, are indeed so large that commands now dropping in will remain unfilled. In the Loire basin there is absolutely nothing transpiring in Merchant Iron, but small Steel specialties are wanted in increased quantities. *Coal.*—The Coal markets of France are in an unsatisfactory condition just at present, pretty much without an exception, due to excessive competition from abroad.

BELGIUM.

(Revue Universelle.)

BRUSSELS, April 6, 1879.—*Iron*—The revival, of which there had been some slight indication, has not made the headway hoped for. There is an increase of orders, it is true, but at figures by no means remunerative. We are informed from Charleroi that some works have their hands full of commands till June next. A good many inquiries are now dropping in, tending to make contracts for Iron for future delivery based upon current prices, but makers have come to the conclusion that it is safer for them to delay making any such contracts till the month of August, when they will be ready to listen to similar proposals, in all likelihood; they decline to tie their hands in any shape at present, at least not at current rates, which they deem altogether too low. We may mention that a demand is springing up at Charleroi for Sheet Iron. The demand for Architectural Iron is still flagging in the Charleroi district, which is an unusual delay; Beams, however, form an exception, although even these might be more active. *Coal.*—The sale of Coal leaves much to be wished for; stocks are fast accumulating, and our companies seem inclined to curtail production in order to restore the equilibrium.

GERMANY.

(Borsenhalle.)

HAMBURG, April 5, 1879.—*Metals.*—This has been a quiet week, and with the exception of Spelter, not much of interest has transpired in the metal line. *Copper* has been quiet and prices undergone no change. We quote; Drontheim, 85 marks; Quincy, 76, and Tough Cake, 65 @ 66. English and Australian is worth, at Berlin, 64 @ 68, and Mansfield, 68 @ 68.50. *Tin.*—The markets here, after some firmness, have weakened again. Berlin quotes Banca, 78 @ 78.50, and English, 72.50 @ 73. Here we quote as follows: Banca, 76 @ 78; English, 73 @ 74; ditto Refined, 75 @ 76. *Lead* is

rather firmer. Berlin quotes: Tarnowitz, Harts and Saconian, 14.75 @ 15; we quote here: English Pig, 16 @ 16.40; Sheet ditto, 16 60 @ 16.80; German Pig, 15.50 @ 16, and Spanish, 16.50. *Spelter.*—There has been great animation during the week, particulary at Breslau, where the following prices have been paid: Godulla, 14 @ 14.10; Kramsta, 14.20, and Hohenlohe, 14.50. Toward the close Silesian Union, amidst large transactions, has sold as high as 14.60. At Berlin Silesian is steady at 15.25 @ 15.75. We are nominally 17.50 marks the 50 kilos. in this market. This is the asking price at present, spot and to arrive, but there are no buyers yet at this advanced figure.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, April 8, 1879.—*Tin.*—The Netherland Trading Society's sale of 23,346 slabs Banca Tin on the 26th ult. averaged 42 guilders; subsequently the price at private sale advanced to 43 for Banca and to 42 for Billiton. Stock, April 1, 1879, 468 slabs Banca and 4134 Billiton, against 56,791 Banca and 400 Billiton in 1879. Deliveries since Jan. 1, 27,179 slabs Banca and 3117 Billiton, against 26,324 Banca and 2864 Billiton in 1878. Afloat from Banca by sailing vessels, 16,500 piculs, against 5600 in 1878. Deliveries of Billiton Tin from private hands since Jan. 1, 14,099 slabs. Stock, 67,234 slabs. Afloat, 1070 tons. Towards the close, Banca receded to 43¼ and Billiton to 41 to 41¼.

AUSTRIA.

(Austrian Trade Journal.)

VIENNA, March 30, 1879.—*Iron.*—The return to inclement weather caused some apprehension that business would again be interrupted; this has, however, not been the case; nobody has been hampered in his dealings, and prices have been fully maintained. The outlook in Austria is by no means gloomy; on the contrary, this country has been fast recovering from previous prostration during the past year or two, and is now in a much sounder position than it has been for the past ten years. Last year's trade movement has shown this abundantly. We have exported goods to the amount of 698,302,513 florins, and imported goods to the amount of 579,547,823, showing an excess of export of 118,754,685 florins. No nation in Europe can show anything like it for the year 1878. The fact is that Austria has inexhaustible resources in every branch, and an unequaled geographical position, surrounded by active trading and consuming nations, and the close of the Russo-Turkish war reopens all our largest fields for the sale of our manufactures. The demand for iron is, however, not yet quite as active as might have been expected; this is due to the late spring and the delay in building.

EAST INDIES.

(Schm'dt, Kus'ermon & Co.)

PENANG, Feb. 24, 1879.—*Tin.*—Tin opened quietly, some small purchases being effected at $18.60 per picul; soon, however, an active demand manifested itself for the United States, and prices rapidly advanced to $19.50, in order to recede toward the close to $19.25. Sales for the week sum up 5300 piculs, 2600 of which for America, 1600 for England and 1100 for China.

(Gilfillan, Wood & Co.)

SINGAPORE, March 1, 1879.—*Tin.*—A large business has been done, almost entirely for the United States. Shortly after our last report was written, the price declined to $19.35, but it has since advanced, and closes firm at $20 per picul. The shipments from Singapore during the past fortnight have been 140 tons by steamer Cyphrenes direct to New York and 200 tons by steamers to London. *Tonnage.*—There are few disengaged vessels in harbor, and although London berth rates are unchanged, rates to Liverpool have advanced 2/6 per ton. The Glenlyle took for New York *via* London 2001 piculs Tin and the Tencer 1401. The J. Colby will leave for New York in a few days. The Uera or Star of the East may take the same berth. *Exchange* 3/8 @ 3/8½.

CHINA.

(Arnho'd, Karberg & Co.)

CANTON, March 14, 1870.—*Coal.*—In Cardiff the only transaction during the fortnight has been a resale from Gadown of 600 tons at $9.75. For the only floating cargo destined for sale the same figure has been offered but no business has resulted. Australian Coals are very weak, and as dealers are well supplied for some time to come, it can scarcely be hoped that an improvement will shortly take place.

INDUSTRIAL ITEMS.

VERMONT.

The proprietors of the White River Iron Works, just west of Bethel, have organized into a stock company.

At the annual meeting of the St. Albans Iron and Steel Works Company last week, the old Board of Directors were re-elected without opposition. The plan for a compromise was reported and approved, and the works are expected to start up in about three weeks.

MASSACHUSETTS.

The Franconia Iron and Steel Works, at Wareham, are running their wire mills nights to supply orders.

Coghlan's steam boiler works, Holyoke, are building one of the largest and heaviest rotary boilers in the United States. Its dimensions are 24 feet between the journals and 8 feet in diameter. It is of iron, with an extra solid flange, three-fourths of an inch thick, and is double riveted throughout and calked inside and out. This boiler is to weigh 18 tons when completed.

Chas. Waters & Co. propose to commence the manufacture of scythes at Everett, if the town will exempt the property from taxation for five years. The town has referred the matter to a committee of citizens, who will report both as to the legality and advisability of making the proposed exemption.

The Fall River Iron Works are experiencing a brisk demand for some of their manufactures, and shipped 3400 kegs of nails in three days recently. The employees in the nail department have not averaged more than three or four days a week for two years past, and a large stock of nails had accumulated, but there appears to be now reason to believe that they will soon get on full time again.

RHODE ISLAND.

The Nicholson File Company, of Providence, will largely increase their capacity this spring, and are now running full.

CONNECTICUT.

Farist & Windsor have just started up their rolling mill at Windsor Locks after an idleness of some ten months. They are working up the stock on hand previous to the Farist & Windsor Company (a new company just formed) taking possession of the mill and property. The new company expect to run the mill steady on Siemens-Martin Steel.

NEW YORK.

The Erie City Iron Works have taken orders for no less than 140 boilers since the 1st of January, including quite a number for Cuba and Brazil. An 80-horse boiler and a 30-horse engine are just being delivered for the Manhattan Beach Improvement Company.

NEW JERSEY.

The New Jersey Iron and Steel Co. have been awarded the contract for the floor beams of the Government Printing Office at Washington. The price was $2.30 per cwt.

DELAWARE.

The Jessup & Moore Paper Co. have increased their motive power at Rockland Mills with two new Dempfel boilers, built by Hilles & Jones, Wilmington. These boilers are set with the Jarvis Furnace.

PENNSYLVANIA.

"Tubal Cain," in the *Sharon Herald* of the 18th inst., says: "For the week ending April 14—At Westerman Iron Company's mill, puddle, guide, hoop, sheet and bar mills, double turn; plate mill, single turn; nail factory and both spike furnaces on; chain factory running all its fires. At the Atlantic Works the same story; puddle, guide, hoop and bar mills, double turn: plate mill, single turn; nail factory on. Keel Ridge Furnace doing as usual. No coke there for some time past, but making plenty of good pig iron. At West Middlesex Mill, nine furnaces on double turn. Another one likely to go on Monday of the present week.

We learn that arrangements are being perfected for the trial of the Siemens Rotator Furnace, at Tyrone, at the old Lyon & Shorb works. We have not been made acquainted with the details, but learn that it is proposed to give this method of reducing the ore to wrought iron a complete and thorough trial.

The Kingston Furnace Company, of Reading (formerly Bushing & Co), put their second furnace in blast last week.

The P. and R. Coal and Iron Co.'s mill in Reading is full of work at present, and the contracts on hand will keep them busy until September. This mill has been for some time past puddling cold charcoal iron car wheels, instead of pig iron, for the heads of their rails. This makes a very superior rail, at a slight advance in price over an ordinary rail, which is more than repaid by the greater wear.

The Thomas Iron Company at Hokendauqua are filling stack No. 4, preparatory to lighting up. This will put six stacks of the company in operation—five at Hokendauqua and one at Lockridge, near Alburtis.

The Baldwin Locomotive Works, Philadelphia, are now working 14 hours per day, and have upward of 2000 names on their pay roll. They have orders from many of the leading roads in the United States, and are just completing about 20 large locomotives on the Consolidated pattern for Australian companies. The New York Central Railway Company have just given out a contract for 25 locomotives.

The Pennsylvania Company have 25 locomotives under way at their shops in Altoona.

The demand for locomotive and car-wheel tires at the Standard Steel Works has greatly increased. There were shipped 1000 tires during the month of March, an aggregate of 7,000,000 pounds. At this astonishing rate of increase the works are yet several hundred behind. This is the largest shipment of locomotive tires for one month ever known in this country.

A number of important orders for machinists' tools have recently been given out by the Bessemer steel manufacturers. Edward Harrington & Son have made sales of heavy machinery to the Pennsylvania Steel Co. Stokes & Parrish, of Philadelphia, have been successful with the Cambria Iron Co., and are now building for them two heavy 8 by 12 horizontal reversible engines, one 10 by 15 and one 10 by 17 hoisting engine, with machinery all complete. They have also just completed a double 8 by 12 vertical reversible engine, with all necessary machinery for operating a drawbridge over the Maumee River, Toledo, Ohio. In addition to the above, Stokes & Parrish are building several hydraulic elevators for parties in Philadelphia, and report the outlook for business as very encouraging.

PITTSBURGH AND VICINITY.

The Keystone Bridge Company have received the contract for putting up the iron-work of the Mexican Universal Exposition buildings. The main house will occupy an area of about two and a half acres of ground. Three thousand tons of iron will be required for the prosecution of this work.

The Pittsburgh and Lake Erie Railroad makes another reduction in fourth-class freights in car loads to Chicago, and points this side taking Chicago rates. This reduction is from 17½ to 15 cents per hundred pounds—equivalent to 50 cents per ton. This on this class of goods is quite an item to Pittsburgh manufacturers, and is in consequence of a similar reduction having been made from points in the Mahoning and Shenango valleys on other lines.

The Black Diamond Steel Works, Park, Bros. & Co., are on full time in all departments, and giving employment to a large number of hands.

The stack at the new glass works at Beaver Falls has been completed, and the building inclosing it is advancing rapidly.

Messrs. Dithridge & Co., of the South Side, Pittsburgh, will start up on Monday next with a full force of workmen, employing double the number of men that they have heretofore. They will employ nearly all the remaining chimney men who do not go to Steubenville on Saturday.

More gas wells are being bored at Rochester. The well now down at the Tumbler Works furnishes enough gas to light the works up with fuel for all the layers for tempering the glass and for one glory hole.

The window-glass factory of Cunningham & Co., formerly Cunningham & Johnsen's, was destroyed by fire on the 15th; loss, $10,000. The fire originated from the falling in of the cupola, which was too heavy for its supports. About 80 men and boys, consisting of cutters, blowers, packers, teazers and gathering boys, will be thrown temporarily out of work. The capacity of this portion of the works was between 160 and 165 boxes of glass, of 50 feet each, per day. The building was erected in 1872.

All departments at the Manchester Locomotive Works are running. An engine for the Edgar Thomson Steel Company is now being built. It contains 130 2-inch flues. The cylinder measures 15 by 24, and the valve is 48 inches. This company is doing quite a business in engines for pumping and drilling oil wells.

Brown's mill, the Wayne Iron and Steel Works, is on double turn in all departments, with good prospects.

Porter, Bell & Co. are about to make a locomotive which will be the largest ever manufactured in their works. The order is from the Lucy Furnace.

Adams & Co.'s glass factory is now running double turn.

Mr. Ripley, of the firm of Ripley & Co., glass manufacturers, has invented a machine called a "finisher," used in the manufacture of pressed glassware. He has a machine in successful operation in their factory at present. By its use a boy can do the work of two men, working in the ordinary way.

WEST VIRGINIA.

The managers of the Pittsburgh, Wheeling and Kentucky Railway have concluded to extend that road to Benwood, which is situated four miles below Wheeling. The object is to reach the mills, factories and furnaces on the Ohio between Wheeling and Benwood, and give them direct all-rail connection with Pittsburgh, Cleveland, Connellsville coke region and the East, which they now either do not have or only via the Baltimore and Ohio Railroad.

The Clifton Nail Mill remains idle, with no prospects of resuming.

The Arlington Stove Works, Wheeling, are now running on full time.

OHIO.

The Steubenville *Gazette* says that Dunlap & Son, glass manufacturers, of Pittsburgh, have proposed to move to that city if Steubenville will raise $15,000 to cover cost of transfer of the factory. It is said that the object of the removal would be to get rid of the domination of the Union; that the firm have had no trouble with their men, but that a strike in one factory stops work in all.

The Girard Rolling Mill is in full blast after a shut down of several weeks.

The Miller Chain Works, Cuyahoga Falls, successors to Matherson Chain Co., are working over 50 men.

The Hubbard *Signal* says: There is some talk of the Hall Iron Works, of this place, resuming operations under a new management about the middle of April. This item is founded on fact.

Cincinnati stove manufacturers say they have all the orders they can fill.

About seven charcoal furnaces in Lawrence county will go into blast between now and the first of June.

The Lawrence Mill, Ironton, is running full double turn.

The entire make of pig iron in the Hanging Rock iron region has been about 2,800,000 tons since the first furnace was erected.

It is doubtful whether the Etna Furnace will go into blast at all or not, at least before next fall. The coal miners are on a strike in the Connellsville region, and coke cannot be got.

The Gaylord Mill at Portsmouth is to be reorganized by John Peebles, of Ashland; J. S. Peebles, of Cincinnati; Mr. J. C. Lewis, of Pittsburgh, and others, and as soon as the arrangements are made, will run. There is talk of adding a steel furnace to the mill.

During the last blast of the Monitor Furnace, which lasted 159 days, she made 1109 tons of iron, an average of seven tons, consuming per ton 3 10-100 tons of iron ore (one-third of which was kidney and two-thirds limestone ore) and 260 bushels of charcoal. The kidney cost her $1.60 per ton; the limestone ore $1.82 per ton, and the charcoal 4½c. per bushel. This year's blast, it is confidently expected, will show still more favorable results. Her iron is highly prized in the markets.

The American Cutlery Company, of Painesville, have elected directors. It is expected that the works will be in running order by July 1.

A number of Eastern workmen employed in the Acme Glass Works, at Steubenville, have stopped work because of a demand that they should make 750 chimneys hereafter for a day's work instead of 600. They claimed that they would not be able to do so. Their places will likely be taken by men from Pittsburgh.

ILLINOIS.

The Illinois Fence Company, operating in the penitentiary at Joliet, have doubled the capacity of their works by adding a number of new machines for making barbed wire.

MISSOURI.

The Laclede Rolling Mill, St. Louis, is now running double turn, employing about 400 men. This company is making the iron for 27 bridges for the Omaha extension of the St. Louis, Kansas City and Northern Railroad. They are also making 800 tons splice bars and bolts for the same. This work is all to be completed by August 15 next.

It is now positively stated that the Vulcan Iron Works will be operated as soon as possible after the lease expires and repairs can be made.

The Midland Blast Furnace Company will blow their furnace in about May 1st. Have been out of blast for a month or more for repairs.

The Scotia Furnace will blow in next week. Been idle two months for repairs.

The Missouri Furnace Company are blowing their two stacks and one stack of the South St. Louis Iron Company. Propose putting another stack in shortly.

There is some talk of blowing the Meir Furnaces of East St. Louis on contract. These furnaces, built with German capital, have never been blown. They will find some difficulty in getting ore unless Pilot Knob will furnish it, since other mines are sold up to their full producing capacity.

Pilot Knob, for the first time in years, is showing some life and policy. Having a large mine, with unknown producing capacity, it has been fearfully and wonderfully mismanaged. Eastern capitalists have a bad habit of putting their Western interests into the hands of men of large pretensions and narrow minds.

GEORGIA.

Dayton has received a proposition to the effect that, if its citizens will donate 10 acres of land and subscribe a loan of $10,000 at reasonable interest for three years, to be secured by mortgage on the furnace property, a company will erect at once an iron blast furnace, equal in every respect to the one at Chattanooga, and which will cost over $100,000. If successful in this, as they anticipate, they will follow with a rolling mill and nail factory. A committee of citizens has been appointed to see what can be done about the matter.

KENTUCKY.

The Norton Iron Works are running full time, making nearly 5000 kegs each week and shipping them almost as fast as made. They are now hauling iron from Bellefont Furnace to supply the rolling mill and factory.

WISCONSIN.

The Milwaukee rolling mill men all report heavy orders coming in.

Mining and Mineral Items.

COAL.

A correspondent, writing from Bellaire, Ohio, says: "Since the opening of Navigation the mining interests in this part of the State have been very brisk. There is considerable talk among miners of demanding an increase of ½ cent per bushel for mining coal."

At the mine of the Longdale Coal and Iron Company, at Sewell, in the New River coal fields, W. Va., 35 men are employed. All their coal is manufactured into coke and sent to the Longdale Furnace in Virginia.

The Nuttallsburg Mine, at Nuttallsburg, in the New River coal fields, Kanawha Valley, employs about 70 men. They coke all their slack.

The Fire Creek Coal and Coke Company in the New River (W. Va.) coal fields, give employment to about 80 men. They are shipping coal and also manufacturing coke.

The Coalbury Mines, on the Kanawha River, continue in full operation, employing 175 men, and shipping by rail to Huntington and thence by river to Cincinnati. The new tipple is about completed. This company have also commenced operations in their Cedar Grove Mine, on the opposite side of the river, on a vein of gas coal.

At Reynoldsville, Pa., the Diamond Gas Coal Company are running every room in their colliery and are still crowded with orders.

Bell's, at Du Bois City, is working 260 miners on full time.

The Rochester Colliery at the same place is running full capacity, and everything at present is quiet there among miners.

The Sandy Lick is doing a fair business, with prospects for a continuance of same.

Powers, Brown & Co., will complete their shutes and incline during the present week, and having already secured handsome orders, will be shipping in a short time, provided the strike does not interfere with their arrangements.

It is currently reported that Himes & Goodwill, of the Diamond Gas Coal Company, are negotiating for a lease of the hill south of them, owned by the Central Land and Mining Company, and when the colliery they are now working becomes exhausted they will operate there, thus losing but little time by the change. It is to be hoped that they may be successful, as they are among the most enterprising operators in this region.

The Sandy Lick, Wm. Sharpe, manager, is negotiating for the Rocky Bend Colliery, six miles west of here, and if successful will run the two mines to their fullest capacity.

The Piedmont Coal and Iron Company, Maryland, have commenced work in their new mine in the 6-foot vein. The coal is said to be of a superior quality.

From Coal Valley, W. Va., we learn that the coal trade is brightening up, and that a good run is expected during the summer.

The Crescent, Eagle, Faulkner, Coal Valley, Straghn, Kanawha and Lewistown coal mines are all making pretty fair time. The Morris Creek Crescent Coal Company are making quarter time.

Rigg & Strudgin will have their new mine ready for work by the 15th of May. It is expected the Cannelton works will start up in May.

A new mine is being opened in the New River coal field, West Virginia, by Messrs. Berry, Williams & Cooper. They are erecting their incline and will likely be ready to commence shipping in a couple of months. They open into a 4-foot vein.

IRON.

With the expected increase in the product of the Menominee Range mines, it is not improbable that Escanaba will take the lead of Marquette in the matter of ore shipments this year. The Marquette mines will divide their business between the two roads about the same as last year. This state of affairs may be expected to continue until the enlargement of the St. Mary's canal and river, and the abolition of canal tolls shall enable the larger class of vessels to clear from this port with full cargoes, and make this comparatively as cheap a water route as that from Escanaba. The canal will never be made free, however, until after it shall have been transferred to the general government; nothing like liberality in that direction can be expected from the State of Michigan.—*Mining Journal.*

We condense the following concerning the Lake Superior district from the Marquette *Mining Journal:* At the Lowthian Mine, the stock pile aggregates about 7000 of first-class hematite. It is reported that the Keystone Mine has been leased to responsible parties, who will renew mining operations at an early day. It is the intention to mine and ship the present season about 30,000 tons from the Cheshire Mine. At the depth of 400 feet the Iron Cliffs Co.'s diamond drill passed through the thin overlying strata of ore that it struck at all the other points. At this place, however, it is 15 feet thick, under which lies nearly 100 feet of soapstone, and beneath that the thicker strata of ore, at which the drill is now at work. These two stratas of ore have invariably been found wherever the drill has been used within the city limits of Ishpeming. We hear the most discouraging reports from the Saginaw Mine. The ore deposit, in many places, has been narrowed down to such an extent as to render mining nearly, if not altogether, unprofitable, and unless something new is developed in the near future, it is quite likely the company will abandon the property. A daily average of about 100 tons of first-class ore is being taken out at the Vulcan Mine. Over 40,000 tons are now in stock piles.

PRECIOUS METALS.

Dr. A. H. Holdsworthy, a veteran prospector, has just discovered, at a point 20 miles northeast of Oroville, a quartz lode 46 feet wide, and traceable by the croppings for a mile or more. The ore shows well in free gold and sulphurets, and the find is considered one of great value.

The Origin of Steam Printing.

It is remarkable that the steam engine was not called to the aid of the printing press sooner than it was; but it had long been used in many of the industrial arts before it became the handmaid to "the art preservative of all arts." The first printing by steam was on the issue of the London *Times* for November 29, 1814. The *Times* then printed from 3,000 to 4,000 copies daily, and Mr. John Walter, the proprietor (the second of that name), began as early as 1804 to consider whether the work might not be expedited in some way. In that year Thomas Martyn, a compositor in the *Times* office, got up a model of a self-acting machine for working the press, and Walter furnished the money for the continuance of his experiments. As usual in the early history of labor-saving machinery, this attempt met with bitter opposition from the workmen, who supposed their craft was in danger. Martyn was in fear of his life because of the threats of the pressmen, and partly on that account, and partly because Walter had small capital at the time, the scheme was given up. As soon, however, as Konig's printing machine was invented, in 1814, Walter consented that it should be tried on the *Times;* but for fear of the workmen, the experiment was made, not in the regular printing office of the paper, but in an adjoining building. Here Konig and his assistant, Bauer, worked secretly for several months, testing and perfecting the machine. On the 29th of November everything was ready for actual work on the paper, and the result is thus told in a biographical sketch of Mr. Walter, which appeared in the *Times* in July, 1847:

"The night on which the curious machine was first brought into use in its new abode was one of great anxiety and even alarm. The suspicious pressmen had threatened destruction to any one whose inventions might suspend their employment—'destruction to him and traps.' They were directed to wait for expected news from the Continent. It was about 6 o'clock in the morning when Mr. Walter went into the press-room, and astonished the occupants by telling them that the *Times* was already printed by steam; that if they attempted violence there was a force ready to suppress it, but that if they were peaceable their wages should be continued to every one of them until similar employment could be procured. The promise was no doubt faithfully performed; and having so said he distributed several copies among them. Thus was this most hazardous enterprise undertaken and successfully carried through, and printing by steam, on a most gigantic scale, given to the world."

The "Ironmonger."—The issue of our English contemporary, the *Ironmonger*, for April 5 has just come to hand and deserves mention as something remarkable in the way of a trade newspaper. It celebrates the first anniversary of the existence of the *Ironmonger* as a weekly journal, which it became after a useful life of 20 years as a monthly. The number before us has 51 pages of well-prepared reading matter, all of immediate commercial interest, edited with care and judgment, and giving evidence of well-directed enterprise. In addition there are 174 pages of advertising, relating to all departments of manufacturing and trade connected with the interests which the *Ironmonger* represents. Besides this there is a foreign supplement of 32 pages, 9½ x 14 inches, printed in English, French, German, Italian and Spanish, and giving a synopsis of the news of the iron and hardware trades for the month. The depression in British industry and trade which its columns report does not seem to have affected the business of the *Ironmonger*, unless it is favorably, which is perhaps due to the fact that the manufacturers and merchants of Great Britain have fully awakened to the importance of pushing trade most when it is least easy to get orders. We wish the *Ironmonger* many anniversaries, with continued prosperity. Of all the English journals which we see, it is the fairest and most intelligent in dealing with American subjects. Its accomplished editor evidently has an extensive and intimate acquaintance with American affairs, and is without prejudice or a disposition to misrepresent the nature and extent of American competition in British and foreign markets.

A New Torpedo Vessel.—The "Compagnie des Forges et Chantiers de la Mediterranée" have just supplied to the Arsenal of Toulon a torpedo boat, whose length is 110 feet and its width only 10 feet, its draft of water not exceeding 28 inches. The speed attainable by this vessel is astonishing, an average of 19.4 knots having been indicated at the official trials. The construction of this torpedo boat is unique, and is admirably adapted to the purpose for which it is intended. In the front of the vessel is a chamber furnished with a tube to receive a Whitehead torpedo of the largest dimensions. When it is desired to launch the projectile, the front of the vessel is opened by special mechanism, and the torpedo is projected into the water either by means of a jet of steam or of compressed air. As soon as the Whitehead torpedo has left the projecting tube, it is propelled automatically, by means of the motor contained within it, and it pursues its course toward the object of attack at a speed exceeding 20 knots.

FAMILY GRINDSTONE.

er much experimenting, we have now fully perfected our GRINDSTONE for family use, and offer it to the public with a FULL GUARANTEE that it is a perfect machine; and also that it will please every one who buys it. So far as we know, it is the first Foot-Power Machine which has been fully adapted to the wants of families for household work and of mechanics for grinding small tools. The stone is of the best quality, and runs perfectly true. It is 8 inches in diameter, 1½ inches thick, and made at the Huron Quarries expressly for this use.

The EMERY WHEEL is the same size as the Stone, and double coated on the side and rim with best Wellington Mills Emery. When not in use, it is taken off and laid aside. A sponge is fastened in the side of the trough, to keep the Stone from throwing water when running at a high speed.

The Machine is run with a clutch, so that there can be no dead centers; but when the foot touches the treadle it starts off in the right direction, and runs at a very high or very low rate of speed, as desired. For grinding Carving Knives and all light tools, and for polishing Cutlery, this Machine is perfect. The legs are made to fold up for shipping, so as to occupy a small space. Weight, 26 pounds. Price, including box, $3. It is for sale in MOST HARDWARE STORES in the country at our price, with a reasonable amount added for freight.

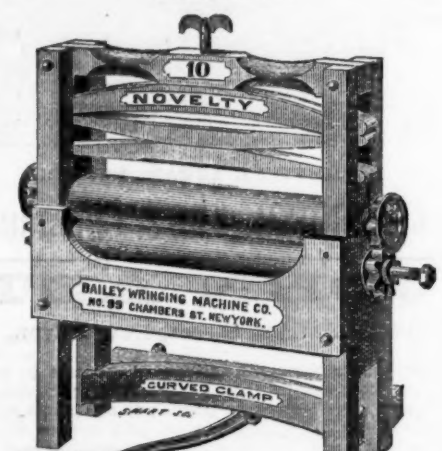
MILLERS FALLS CO.,
74 Chambers Street, New York.

BAILEY WRINGING MACHINE CO.,

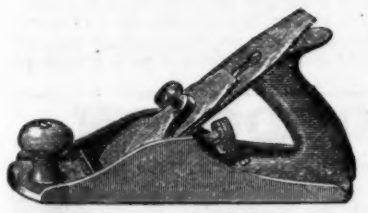
No. 99 Chambers Street, New York.

MANUFACTURERS OF

Novelty and Excelsior Clothes Wringers. Novelty and Excelsior Carpet Sweepers.



Defiance Metallic Planes, Spoke Shaves, Try Squares, Box Scrapers, &c., &c.



SPECIAL QUOTATIONS ON THE ABOVE GOODS FOR EXPORT.
Send for Illustrated Price List and Discount Sheet.

TRAVIS'

Automatic Self-Adjusting Iron Railway Cross-Tie.

These Cross-Ties have been in use since September 9, 1878, in a severe curve on the Philadelphia and Baltimore Central Railroad, with the most satisfactory results. The main features of this sleeper are:

1. It will save about one-half the labor.
2. It does away with all spikes, bolts, fish-plates, or joint straps.
3. It dispenses with drilling Bessemer steel rails, as every hole drilled is acknowledged to be an incipient fracture to the rail.
4. It will outwear twelve renewals of ordinary wood sleepers.
5. It has proved the most elastic sleeper in use, during all seasons.
6. It insures smooth and easy riding, with minimum wear and tear.
7. It was particularly noticed that it did not heave with the frost, while the wood ties that formed the connection with the iron ties, were heaved from 1½ to 2 inches.
8. It will be seen that the more weight upon the rail the firmer it is held, with no possible chance of accident by the rails spreading.
9. It is a noticeable feature that the noise is much less, it being deadened by the elastic blocks which support the clamps.

For further information address

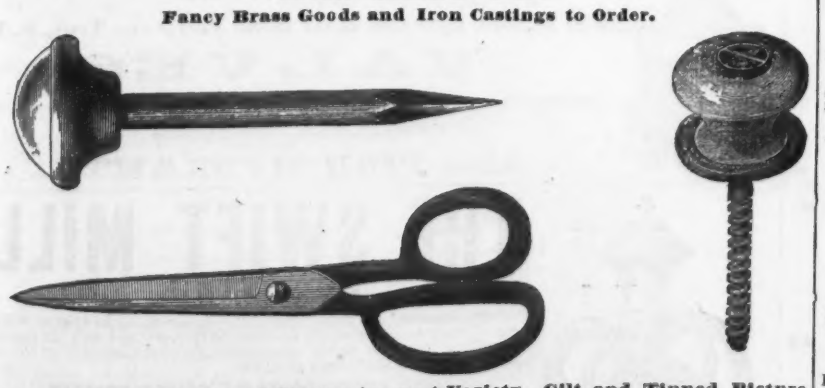
THOMAS W. TRAVIS,
628 N. Twenty-fourth Street, Philadelphia, Pa

THE TURNER & SEYMOUR MFG. CO.,

MANUFACTURERS OF

Upholsterers', Stationers', House Furnishing and Fancy Hardware AND NOTIONS.

Fancy Brass Goods and Iron Castings to Order.



Picture Nails, Knobs and Hooks, in great Variety. Gilt and Tinned Picture Wire, Twisted and Braided.

American Cast Shears,
Sold by Hardware and Notion Dealers everywhere.

Also Manufacturers of Shade Fixtures and Trimmings, Ink Stands, Twine Boxes, the Celebrated "Family" Egg Beater, Nutmeg Graters, Escutcheon Pins, Curtain Rings, &c., &c.

FACTORIES, Wolcottville, Conn. WAREHOUSE, 81 Reade Street, New York.

NATIONAL Horse Nail Co.

MANUFACTURERS OF

FINISHED
[BRIGHT OR BLUED]

These nails are made of the best brands of NORWAY IRON, and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,
VERGENNES, VT.
HORACE DURRIE & CO., Agents,
No. 97 Chambers St., New York

ANVIL NAIL CO.

We desire to call the attention of the trade to our new manufacture of

Steel Horse Shoe Nails,

made from metal prepared in the Martin-Siemens Furnace by our PATENT process, which produces a nail having all the requisites for a

PERFECT HORSE SHOE NAIL.

The well-known desirable properties of a perfect nail are, that the POINT should be sharp, the SHANK stiff, to drive without crippling under the hammer, SOFT enough to clinch readily, while sufficiently tough to avoid all danger from the "drawing the clinch" or breaking the neck under the head. These properties we claim for the

"ANVIL HORSE NAILS."

In the process of manufacture the metal is compressed under the head, which gives the nail great strength where it is required (between the shoe and hoof), and the cold rolling gives it a stiffness attained in no other way, while the quality of the metal used insures a clinch and point unsurpassed by any nail ever offered in the market.

Samples and prices sent on application.

ANVIL NAIL CO.,
65, 67 and 69 Washington St., New York.

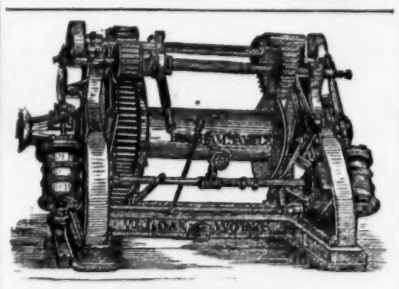
A. F. PIKE.
East Haverhill, - New Hampshire,
Manufacturer and Wholesale Dealer in
Scythe, Axe, Knife and Hacke

STONES.

Factories at Haverhill and East Haverhill, N. H., and Evansville and Westmore, Vt.

Genuine OLD RELIABLE,
INDIAN POND (Red Ends),
LETOILE,
LAMOILLE,
DIAMOND GRIT,
UNION,
WHITE MOUNTAIN,
PREMIUM,
GREEN MOUNTAIN,
MOWING MACHINE,
RAGG.

Stones gotten up and labeled in any style desired.
PRICE and QUALITY GUARANTEED.
All the above Stones are of good k en grit and *will not glaze.*

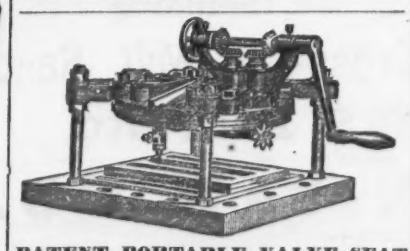


The "Ramsay Improved Steam Winder,"
Manufactured by *H. A. RAMSAY & CO.,*
Vulcan Iron Works, Baltimore, Md.

RIEHLE BROS.
Office and Works, 9th St., above Master, Phila.
Warerooms, 50 & 52 S. 4th St., above Chestnut, Phila.
New York Store, 91 Liberty Street.

STANDARD
SCALES AND TESTING MACHINES
"Patented" Furnace Charging Scale.

Double Beam R. R. Track Scale, Compound Parallel Crane Beams, &c. Patented First Power Lever Wagon Scales. Testing Machines any capacity.
Send for Illustrated Price List.



PATENT PORTABLE VALVE SEAT ROTARY PLANING MACHINE.
Manufactured by the
L. B. Flanders Machine Works,
1025 Hamilton St., Philadelphia.
Descriptive Circular on application.

BOILERS, ENGINES AND TANKS FOR SALE at LESLIE BOILER WORKS Pearl, near Greene St., Jersey City. Repairs promptly attended.

Established in 1839. Formerly L. & A. G. Coes.

L. COES & CO.

Manufacturers of L. Coes'

GENUINE IMPROVED AND MECHANICS

Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866, MARCH 23, 1869, REISSUED 1870.
NOVEMBER 10, 1863, FEBRUARY 23, 1864, REISSUED JUNE 1, 1869, IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Handle.

None genuine unless stamped "L. COES & CO."

WORCESTER, MASS.

Warehouse, 97 Chambers St., & 81 Reade St., N. Y.
HORACE DURRIE & CO., Sole Agents.

These Axes Made from Firth's Best English Cast Steel.

HORACE DURRIE & CO.
Agents, - - - New York.

The 1879 Pennsylvania Lawn Mower.

LIGHT DRAFT AND EASILY ADJUSTED.

Every Machine Warranted to Work as Represented.

Points Claimed as being Meritorious:

1. Lightness, combined with Strength in Construction.
2. Easiness of Adjustment.
3. Easiness in Securing and Adjusting the Handle
4. The Least Liability to Obstruction from Clogging, either in short or (for a Lawn Mower) high Grass.
5. Lightness or Easiness of Running while being worked.
6. The Attractive Appearance of the Machine.

It is the lightest machine in use, and all that necessary to satisfy our customers of its superiority is to place it in competition with *any other machine* in the town in which they may reside.

PRICE LIST.

Width of Cutter.	Style. Driving Wheels.	Power required.	Weight.	Price.
10 inch.	8 inch.	A Child.	30¾ lbs.	$14.00
12 "	8 "	A Lad.	33½ "	18.00
14 "	8 "	A Lady.	36 "	20.00
16 "	8 "	One Man Size.	38 "	22.00
18 "	8 "	" "	41 "	24.00

NEW MACHINES.

15 inch, 10½ inch Driving Wheels, 6½ inch Cylinder, Man Size, 48 lbs. $22.00
17 inch, 10½ inch Driving Wheels, 6½ inch Cylinder, Man Size, 51 lbs. 24.00

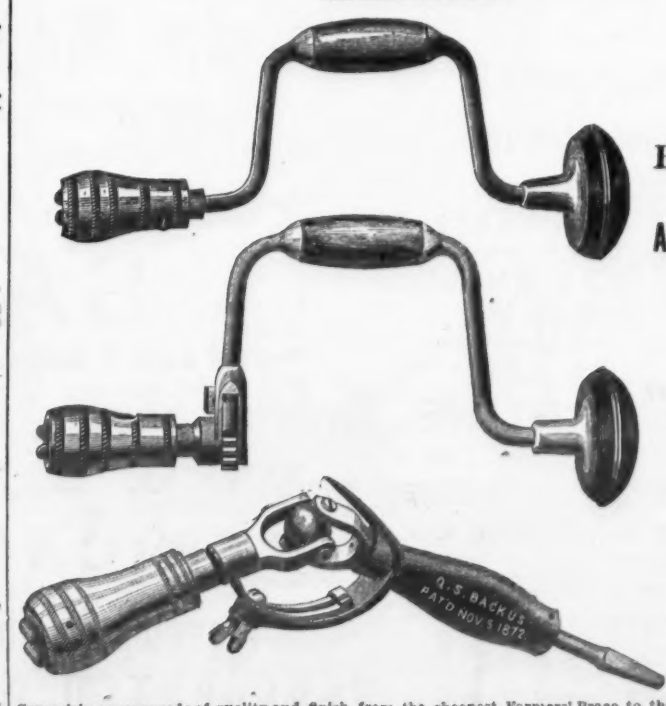
FOR SALE BY

LLOYD, SUPPLEE & WALTON, Philadelphia.
HORACE DURRIE & CO., New York.
AMES PLOW CO., Boston, Mass.
PRATT & CO., Buffalo, N. Y.
HAMILTON & MATHEWS, Rochester, N. Y.
SIMMONS HARDWARE CO., St. Louis, Mo.
MARKLY, ALLING & CO., Chicago, Ill.
DUCHARME, FLETCHER & CO., Detroit, Mich.

Q. S. BACKUS,

Sole Manufacturer of the

BACKUS Patent



Bit Braces, Angular Borers Ratchet and Straight Extensions, &c.

Comprising every grade of quality and finish, from the cheapest Farmers' Brace to the finest Steel Sweep, heavily nickel plated, with rose-wood handles and lignum vitæ heads, being the most complete line offered by any manufacturer in the country, and which for simplicity of construction and effectiveness have no equal. Catalogues and price lists furnished upon application at office and salesroom,

No. 102 Chambers Street, NEW YORK.

Gossip About Lake Superior Mines.

A correspondent of the Pittsburgh *Telegraph*, writing from Cleveland, makes some statements concerning the outlook from which we condense as below, not vouching for the truth of the same: The shipments during the coming year will probably not exceed (equal !) by 10,000 or 20,000 tons those of last year, although the demand is far in excess of anything for five years past. This is brought about by the total suspension this year of shipments from a mass of hematite and lean-ore mines, which, in the balmy and anti-panic days, aggregated a very respectable output in quantity, if not in quality. Indeed, last year's report showed quite large shipments from hematite mines that this year will not send out a ton—notably the Rolling Mill Mine, whose affairs are involved in litigation, and which shipped about 40,000 tons last year, will lie dormant this season. The famous Republic Mine will decrease its output this season 30,000 tons—not from their inability to sell, but because their vein is now worked down so deep into the bowels of the earth that mining becomes a slow and expensive process. This mine in future will be compelled to tunnel in the mountain, and use large quantities of timber for supports, similar to the bullion mines in the far West. It has not been learned that any of the old standard mines will this year increase their shipments. Marine freights from Marquette to Cleveland may be quoted at $1.40 to $1.50; from Escanaba, 80 to 95 cents. Ores are very stiff at the following prices, with talk of an advance: Republic, $7; Jackson No. 1, $6.75; Champion No. 1, $6.75. The Cleveland Company have not yet fixed a price, but it is expected they will sell at $6.25 to $6.50. It is a notable fact that only such ores as are sufficiently free from phosphorus to admit of their use in Bessemer steel are in active demand, as the whole tendency of the iron industry seems to be drifting in the direction of steel.

The prospects of the Northern Pacific Railroad are looking brighter. A loan of $2,000,000 for extending the line from Bismarck to the Yellowstone, 200 miles, was fully subscribed on the 16th inst. The bonds draw six per cent. interest, and are secured by mortgage on lands west of Missouri only, but are further protected by sinking funds and interest lien upon earnings of the entire road.

The Steel Ore Company, of Boyertown, Pa., shipped 20 cars of ore to Reading last week, and expect to ship more shortly. They find a ready sale for their ore. A new siding and ore wharf have just been completed for the purpose—of shipping their ore.

The Rolling Mill Mine, Lake Superior, will be pumped out, and operations resumed at as early a day as practicable.

The Iron Age Directory

and Index to Advertisements.

HENRY DISSTON & SONS

KEYSTONE SAW, TOOL, STEEL and FILE WORKS,

Front and Laurel Streets, Philadelphia,

MANUFACTURERS OF

SAWS OF ALL KINDS, FILES AND TOOLS, AND SPECIAL GOODS MADE FROM SHEET STEEL.

All goods stamped Henry Disston & Sons, and bearing our trade mark, are fully warranted.

Branch Works, Tacony, Philadelphia. **Branch House, Randolph & Market Streets, Chicago, Ill.**

AUSABLE HORSE NAILS,

Twisted, Bent and Drawn COLD.

Hot Forged and Cold Hammered Pointed,

Are the **only Nails in market** that are made in imitation of the **Hand Process.** They have **the uniformity of Machine** Nails and the **toughness** of those hammered by hand. Our

HOT FORGED AND COLD HAMMERED POINTED NAILS

Are the Standard Nails,

and are **acknowledged to be the best in the market.** They are used by the **best shoers** in **New York, Brooklyn, Philadelphia, Chicago, Saint Louis, Milwaukee, Baltimore,** &c., and

GENERALLY THROUGHOUT THE UNITED STATES.

They also compete successfully in Foreign Countries with machine and hand-made Nails of their own manufacture.

AUSABLE HORSE NAIL CO.,

4 Warren St., New York.

Steam and Frost prevented on Show Windows.

REVOLVING VENTILATORS

For everything (and every size), from a hat or cap to an exhibition building.

Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, size six inch diameter, $1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

Prof. A. L. LOOMIS, M. D., University of City of New York, writes as follows:

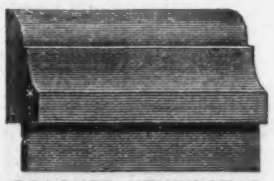
"From my personal experience and that of my patients who have used your Ventilator during the past six months, I am convinced that your method of removing dust, impurities and dampness from the atmosphere is the best which has as yet been proposed. By it the air in an apartment can be constantly changed without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nurseries and school rooms."

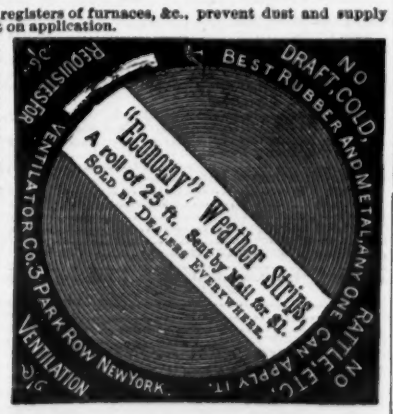
Air-Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply steam *filtered air.* Prices and discounts to the trade sent on application.

The "**Economy**" Molding Weather Strip is perfect in every respect. By enlarging edge of rubber or felt, and making slot in molding to correspond (see engraving), we save all *after expense* of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed by taking old piece out of either end of molding, and sliding in a new piece. By this method of securing rubber all uncertainty of *fastening* or *undoing* of glue or tacks is overcome.

Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Moldings, &c., and thus make perfect Weather Strips.

No. 6.





BRACHER VENTILATOR CO., No. 3 Park Row, New York.

WM. H. HASKELL & CO.

Pawtucket, R. I.,

MANUFACTURERS OF

COACH SCREWS

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

FORGED SET SCREWS,

AND

TAP BOLTS.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

Mica and Porcelain Materials.

THE CHESTER MICA AND PORCELAIN CO.

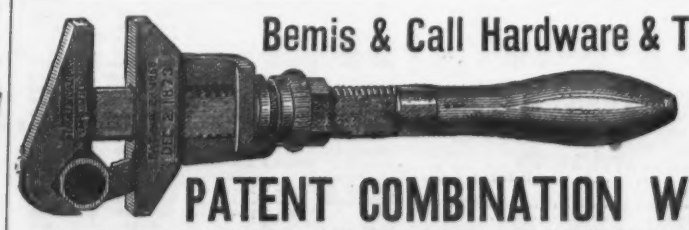
OFFER

Mica of the Best Quality,
Feldspar of highest Standard and Purity,
Quartz, the Finest, Whitest, Best.
Kaolin, Asbestos and Baryta.

Best Terms, Wholesale and Retail.

Address, CHESTER MICA AND PORCELAIN CO., 87 Liberty St. New York.

Bemis & Call Hardware & Tool Co.



PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

Bergen Port Spelter.

MINES: Lehigh Valley, Pa. WORKS & FURNACES Bergen Port, N. J.

The only Miners and Manufacturers of

PURE LEHIGH SPELTER

From Lehigh Ore.

Warranted free from any trace of Lead, and pecially adapted for

Cartridge Metal and German Silver.

Also manufacturers of

BERGEN PORT OXIDE ZINC

Superior for LIQUID PAINT on account of its bod and wearing properties.

F. OSGOOD & CO., Proprietors.

E. A. FISHER, Agent, 13 Burling Slip, N. Y.

A. B. GUNNISON,

MANUFACTURER OF

WOOD PUMPS

ERIE, PA.

ESTABLISHED, - 1836

Warranted Genuine

Cucumber Pumps & Pipe. Also Popla Pumps, Lined Pumps, &c.

The Trade Supplied by

H. B. GRIFFING, 60 Cortlandt St., N. Y.
P. MANN, Washington, D. C.
SCOBIE, HARRISON & PARKER, 125 Liberty Street, Pittsburgh, Pa.
KNECHT & THOMAS, Winchester, Ind.

—AND BY—

A. B. GUNNISON

Manufacturer, ERIE, PA.

CLEM & MORSE,

Manufacturers and dealers in

Steam & Hand-Power HOISTING MACHINES,

Dumb Waiters, Basement and Invalid Elevators,

No. 413 Cherry St.,

PHILADELPHIA, PA.

All kinds of Hoisting Machines repaired. Estimates furnished on application.

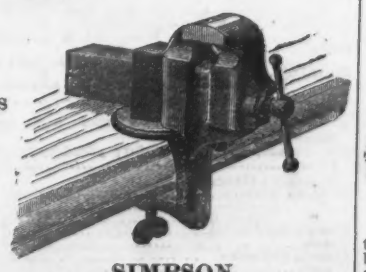
ATHOL MACHINE CO.,

Athol, Mass.,

MANUFACTURERS OF THE

AMERICAN Meat and Vegetable Chopper.

Special quotations for export.



SIMPSON Adjustable Parallel Vise.

Send for Price List.

New York Wholesale Prices, April 23, 1879.

HARDWARE.

Anvils.
Eagle Anvils (American)....⅌ ℔ 9c dis 20 %
Wright's....⅌ ℔ 10½c over 250 ℔s 10¾c
Armitage's Mouse Hole....9¾ @ 10c
Trenton....10c

Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mf. Co. / Humphreysville Mfg. Co. / Ives / Beecher (French, Swift & Co) / Griswold / Nobles Mfg. Co. / Kasson's Patent } dis 50 @ 5 & 10 %
Cook's, Douglass Mfg. Co....dis 50&5 %
Cook's, Ives'....dis 45&10 %
Snell Mfg. Co.'s C. S. Augers....dis 50&10 %
" " B. Machine....dis 50 %
" " C. S. Bits....dis 40 %
" " Jenning's Bits....dis 35 %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand-Rail Bits....dis 10&10&10 %
Russell Jennings' Augers....dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers, dis 25&10&10&10 %
Imitation Jenning's Bits....dis 35@40 %
Ives' "Jennings" Bits....dis 25&10 %
Lewis' Single Twist Bits....dis 40 %
Andrews Bits....dis 50 %
Griswold's Patent Bits....dis 20 %
Expansive Bits, Clark's, small, $18; large, $26, dis 20 %
" " Ives'....$20 @ $30—dis 33⅓ %
" " Blake's....$20—dis 40 %
" " Parmelee's....$20 and $30..dis 33⅓ %
Hollow Augers Ives' / French, Swift & Co. } dis 40 %
" Bonney's Adjust....⅌ doz $48—dis 40 %
" Stearns' Adjust., ⅌ doz $48—dis 25&10 %
" Ives' Expansive ...each $4.50—dis 40 %
" Univ'sal Expansive, each $4.50—dis 20 %
Gimlet Bits....$7.50 ⅌ gross, dis 50 %
" Diamond....⅌ doz $1.00 dis 25&10 %
" "Bee"....dis 45&10 %
Double Cut Gimlet Bits Shepardson's....dis 40 %
" Ct. Valley Mfg. Co...dis 30&10 %
" Hartwell's....dis 60 %
" Douglass'....dis 40 %
" Ives'....dis 50&10 %
Morse's Bit Stock Drill, List of May 15, '78....dis 25 %
L'Hommedieu's Ship Augers....dis 15 %
Watrous Ship Augers....dis 15 %

Awl Hafts.
Sewing, Brass Ferrule....$3.50 ⅌ gross—dis 40&10 %
Peg, " ....3.50 " dis 40&10 %
Patent Sewing, Short....$1.00 ⅌ doz—dis 40&10 %
" " Long....$1.40 ⅌ doz—dis 10 %
" Peg, Plain Top....$10.00 ⅌ gross—dis 40&10 %
" " Leather Top....12.00 " dis 40&10 %

Awls, Brad Sets, &c.
Awls Sewing, Common....⅌ gross $1.35—dis 25 %
" Sewing, Best....⅌ gross 1.40—dis 10 %
" Shouldered Peg....⅌ gross 2.25—dis 15 %
" Patent Peg....⅌ gross .60—dis 15 %
" Shouldered Brad....⅌ gross $2.70—dis 25&10 %
" Handled Brad....$7.00 ⅌ gross—dis 25&10 %
" Handled Scratch....$7.00 ⅌ gross—dis 25&10 %
" Socket Scratch....$1.00@$1.25 ⅌ doz—net
Brad Sets, Aiken's....⅌ doz $12.00—dis 40&10 %
" No. 42, $10.50; No. 43, $12.50....dis 60&10 %
" Stanley's Excelsior, No. 1, $9.60...dis 25&10 %
" " No. 2, 4.80...dis 25&10 %
" " No. 3, 7.80...dis 25&10 %

Axes. Light. Med. Heavy.
M. H. Jones & Co....$8.00 $8.50 $9.00 ⅌ doz net.

Axles.
Common (Guy C. Hotchkiss, Field & Co.)....⅌ ℔ 3½c
Solid Collar, Case Hardened, Chilled Box....⅌ ℔ 8c
Axle Grease.—Frazer's....⅌ ℔ 6c

Balances.
All Spring Balances....dis 25&10 %

Bells.
Hand, Light Brass....dis. 75 @ 75&5 %
" Extra Heavy....dis 50 %
" White Metal....dis 70 %
" Silver Chime....dis 25&10 %
" Swiss....dis 25 %
" Globe (Cone's Patent)....dis 25&10 %
Gong, Abbe's....dis 30&10 %
" Yankee....dis 40&10 %
" Barton's....dis 40&2 %
Crank, Taylor's....dis 25&10 %
" Brook's....dis 50 %
" Cone's....dis 10 %
" Connel's....dis 50&10 %
Lever, Sargent's, new list Dec., '78....dis 60&10 %
" Taylor's Bronze or Plated Lever....net
" " Japanned Lever....dis 25&10 %
" Hart, Bliven & Mead Mfg. Co....dis 50&10&2 %
Pull, " " ....dis 50&10&2 %
" Brook's....dis 50 %
" Western....dis 25&10 %
Call....dis 25 %
Cow, Common Wrought....dis 20&10 %
" Western....dis 20&10 %
" " Sargent's new list....dis 20&10 %
" Kentucky "Star"....dis 20&10 %
" " Sargent's new list....dis 20&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog } dis
$12.00 10.00 9.00 8.00 6.00 5.00 3.50 2.50 5.00, } 50&10 %
" Yaw's Genuine....dis 50 %
" Texas....dis 50 %
" Wilson's Moore's)....dis 50 %

Bellows.
Blacksmiths', Common....dis 45 %
" Extra and Pittsburgh Pattern....dis 20 %
Moulders....dis 25 %
Hand Bellows....dis 20 %

Belting, Rubber.
N. Y. Belting and Packing Co....new list net

Bit Holders.
Extension, Barber's....⅌ doz $15.00—dis 40&5 %
" Ives'....⅌ doz $15.00—dis 40 %
Diagonal....⅌ doz $24.00—dis 40 %
Angular....⅌ doz $24.00—dis 40 %
Blind Adjusters.—Domestic....⅌ doz $3.00, dis 20 %
Blind Fasteners.—Mackrell's....dis 30 %
Van Sand's....No. 2000, per gross, $7.00—dis 10 %
" old pattern....⅌ gross, $10.50, dis 33⅓ %
Washburn's Patent....⅌ gross $14.00, dis 40 %
Merriman's....new list net
Mackrell's....⅌ doz. $0.65, dis. 10 %

Blind Staples.
Boardman's Patent, ⅜ in. and larger....⅌ ℔ 15c net
" 5-16 in....⅌ ℔ 20c dis net
Blocks.—Burr & Co....dis 25 %
Differential Pulley Blocks....dis 20 %
Penfield Block Works, Rope and Iron Strap'd..dis 40 %
" " Wrot. Iron Com. bushed.dis 30 %
" " all steel roll'r.dis 15 %
" " Sheaves....dis 30 %
Stanley R. & L. Co., Rope and Iron Strap'd. dis 35&10 %

Bolts.
Cast Iron Barrel, Shutter, &c....dis 70&10&10 %
Cast Iron Chain (Sargent's list)....dis 70&10&10 %
Bush's Lever and Chain Bolts....dis 40, 10&10 %
Wrought Iron Barrel....dis 60&10 %
" Square....dis 60&10 %
" Shutter (Stanley's list)....dis 50 %
" " (Sargent's list)....dis 65&10 %
" Sunk Flush, Sargent's....dis 66⅔&10 %
" " " Stanley's....dis 25&10 %
" B.K.Flush, Com'n, Stanley's..dis 50&7½ %
" " " Ex. Heavy, " dis 40&10 %
" Plated Knob & Slide Flush " dis 50&10 %
Carriage and Tire, Common....dis 75&3 % cash
" Norway Iron....dis 70 %
" R. B. & W....(old list) dis 70&5 %
" Philadelphia....dis 70 %
" Coleman....dis 60&10 @ 60&20 %
" Shelton's....(old list) dis 70&5 %
Tire, Am. Screw Co.'s, Phila....dis 70&5 @ 70&10 %
" "Bay State'....dis 75&10 @ 80 %
Star (Phila)....dis 60&10@60&20 %
Stove—American Screw Co.'s....dis 55&5 @ 60 %
" R. B. & W....dis 60&10&5 %
Plow....dis 50&10 %
" R. B. & W....dis 50 %
Machine....dis 70& 5 %
Bolt Ends....dis 60 %
Borax....10½@11½c ⅌ ℔ net

Boring Machines. Upright. Angular.
First quality, no Augers....$5.00 $6.75 dis 45&10 %
" with Augers... 8.50 10.25 dis 45&10 %
Snell's, no Augers.... 4.75 6.25 dis 40 %
Phillips' with Augers .... 0.00 dis 3[illegible]

Bow Pins.
Hotchkiss'....low list dis 10 %
Humason, Beckley & Co.'s....dis 60&10 %
Sargent & Co.'s....$10.70 and $21.40, dis 70&10 %
Braces.—Barber's Patent....dis 40&5 %
C. S. Backus....dis 50&10 %
Wilson Mfg. Co....dis 10 %
Spofford's Patent....dis 50&5 %
Noble's Patent....dis 40&5 %
Ives' Patent Braces....dis 55 %
Common Ball (American)....dis 35 @ 10 %
Brackets.—Shelf (Sargent's)....dis 66⅔&10 %
Swing (T. & S. Mfg. Co.)....dis 33⅓ %
Bright Wire Goods....dis 70&10 %
Bull Rings.—Union Nut Co....dis 50&20 %
Sargent's....dis 70&10 %
Hotchkiss'....low list dis 10 %
Humason, Beckley & Co.'s....dis 60&10 %

Butts.
Wrought Brass....dis 60 %
Cast Brass, Tiebout's....dis 40&10 %
" Corbin's....dis 50&10 %
COMMON CAST, NOT DRILLED.
Fast Joint, Narrow....dis 60&10 %
" Broad....dis 65&10 %
Loose Joint, Narrow and Broad....dis 70&10&10 %
DRILLED AND WIRED.
Fast Joint, Narrow....dis 55&10 %
" Broad....dis 60&10 %
Loose Joint / Japanned / with Acorns } ....dis 75 %
Parliament Butts....dis 60&10 %
Mayer's Hinges....dis 75&10 %
Loose Pin no Acorn....dis 70&10&10 %
" Acorns....dis 70&10&10 %
" " Japanned....dis 70&10&10 %
" Plated Tips....dis 70&10 %
Union Mfg. Co.'s Fancy Butts—
Figured Enameled Loose Joint....dis 60&10 %
Boston Finish, Plain....dis 60&10 %
" " with Iron Acorns....dis 75&10 %
" " with Silvered Acorns....dis 70&10 %

WROUGHT IRON.
Fast Joint Narrow / Lt. Narrow / Broad / Loose Joint, Broad / Table Butts, Back Flaps, &c. / Inside Blind, Regular / " Light / Loose Pin, Wrt. } dis 60 %
Spring Hinges:
American Spiral Spring Butt Co., Jap'd....dis 25 %
" " " Fancy....dis 10 %
Geer's Single and Double Acting....dis 25 %
Sabin Mfg. Co.'s Double Acting....dis 35 %
Centennial, Japanned....dis 25 %
" Ornamental....dis 20 %
Union Spring Hinge Co.'s....dis 25 %
American Spring Hinge Co.'s....dis 25 %
Union Mfg. Co....dis 25 %
Bommer's....dis 25 %
Blind Butts, Parker....dis 75&10 %
" Palmer....dis 40&10&10&2 %
" Seymour....dis 65&10&10 %
" Shepard....dis 70&10 %
" Lull & Porter....dis 66⅔&10 %
" Nicholson....dis 45&10 %
" Huffer....dis 50@10 %
" Clark's, Nos. 1, 3, 5, 40 and 45....dis 75&10 %
" Buffalo "Noiseless"....dis 75&10 %
" Sargent's....dis 80&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co....dis 25 %
Bradley's....dis 25 %
Beatty's....dis 35 %
1 2 3 4 5 6 7 8
$16.50 19.00 21.50 24.00 27.00 30.00 33.50 36.50
Hart Mfg. Co....dis 60&10 %
0 1 2 3 4 5 6
$20.00 26.00 29.50 33.00 37.00 41.50 45.00

Can Openers.
Messenger's Comet....⅌ doz $3.00, dis 20 %
American....⅌ doz $2.25, dis 75 %
Duplex....⅌ doz 25c, dis 15@20 %
Lyman's....⅌ doz $3.75, dis 20 %
Poole....⅌ doz $3.75, dis 40 %
No. 4, French....⅌ doz $2.25, dis 60 %
No. 5, Iron Handle....⅌ gross $6.00 net
Eureka....⅌ doz $2.50, dis 10 %
Sardine Scissors....⅌ doz $7.00, dis 55 %
Star....⅌ doz $5.00, dis 25 %
Caps—Percussion, ⅌ 1000.
Hicks & Goldmark's G. D. & S. B....35c
" " E. B. 1-10 Ground....70c, dis 6 %
" " E. B. 1-10 Turned....65c, dis 5 %
" " D. W. P. 1-10....$1.40, dis 5 %
" " D. W. P. ½....1.35, dis 5 %
" " Colt's 1-10....70c, dis 5 %
F. L....50c, dis 6 %
Ely's E. B....1-108, 65 @ 68c
" Double Waterproof, ...1-48, $1.50; 1-108, $1.58c
Colt's....1-108, 80c
Cartridges.—Metallic....dis 60&7 %
Cards.—Horse and Curry....dis 33⅓&10 %
Cotton....dis 25&10 %
Wool....dis 25&10 %
Car Pusher.—"Giant"....$6.25 each, dis 20 %

Carpet Stretchers.
Cast Steel, Polished....⅌ doz $5.00, dis 30 %
" Iron Steel Points....⅌ doz $2.00, dis 55 %

Casters.
Bed....dis 55 %
Plate and Shallow Socket....dis 55 %
Deep Socket....dis 40 %

Cattle Leaders.
Hotchkiss' Sons'....dis 10&10 %
Humason, Beckley & Co.'s....dis 60&10 %
Sargent's....dis 70&10 %

Chain.
Trace, 6½-1-2....by the cask, ⅌ pair 45 @ 46c
" 6½-10-3....by the cask, ⅌ pair 43 @ 44c
" 7-10-2....by the cask, ⅌ pair 40 @ 50c
German Halter Chain....dis 40&10 %
" Coil....dis 40&10 %
Oneida Halter Chain....dis 40 %
Galvanized Pump Chain....⅌ ℔ 10½c dis 10 %
Jack Chain, Iron....dis 60&10 %
" Brass....dis 55&10 %

Chalk.
White....⅌ gross 55c net
Red....⅌ gross 75c net
Blue....⅌ gross 90c net
White Crayons....⅌ gross 14½c net

Chisels.
Socket Framing, Crossman....dis 70 & 5 %
" " Buck Bros....new list. dis 25 %
" " Merrill....dis 70 %
" " Witherby Tool Co....dis 70 %
" " Douglass'....dis 70 %
" Firmers, Crossman....dis 70&5 %
" " Buck Bros....new list. dis 25 %
" " Merrill....dis 70 %
" " Witherby Tool Co....dis 70 %
" " Douglass'....dis 70&5 %
" Corner....dis 65@70 %
Tanged Firmers extra....dis 40 %
" " Butcher's....$5.00 @ $5.25 to £
" " Spear & Jackson's....5.00 to £
" " Buck Bros (Shank)....5.00 to £

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron....dis 25 %
" Adjustable, Gray's....dis 20 %
" " Lambert's....dis 20 %
" " Snow's....dis 40&5 %
" " Hammer's....dis 15 %
" " Stearns'....dis 15&10 %
" Cabinet, Sargent's....dis 60&10&10 %
" Carriage Makers', Sargent's....dis 60&10&10 %
" Cord and Tape (T. & S. Mfg. Co.)....dis 30 %

Clips, Axle.
Norway or Best....dis 60%
Superior....dis 60&10 %
Cockeyes....1¼ in., 28c.; 1⅜ inch, 33c.; 1¾ in., 37c, net

Cocks, Brass.
Racking, new list....dis 50 %
Globe....dis 50 %
Plain Bibbs, "....dis 50 %
Ale and Beer, new list....dis 50 %

Coffee Mills.
Board and Box....dis 25 %
Increase Wilson's....net
Selsor's Pat....$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.)....dis 20 %
French Steel....dis 20%
The Swift (Lane Bros.)....dis 25 %

Combined Dinner Pail and Lantern.
Per doz $15.00....dis 30 %

Compasses, Dividers, &c.
Compasses....dis 45 %
Callipers....dis 45&10 %
Dividers....dis 45 %
Bemis & Call Co.'s Dividers....dis 60&20 %
" " Compasses & Callipers....dis 55 %
" " Wing & Inside or Outside.dis 50&5 %
" " Double....dis 60 %
" " Call's Pat. Inside....dis 35&10 %
Cook's....dis 15 %
Excelsior....dis 50 %
Miller's Patent....dis 25 %

Coopers' Tools.
Bradley's....dis 15 @ 20 %
Corkscrews.—Humason & B....dis 40 %
Corn Knives and Cutters.—Bradley's....dis 10 %

Crow Bars.
Cast Steel....⅌ ℔ 9c net
Iron, Steel Points....⅌ ℔ 5c
Crucibles.—Gautier & Co....⅌ No. 5½c

Curling Irons, &c.
½, ⅝, ¾ in., $1.80, 2.00, 2.40....dis 10 %
Curling Tongs....⅌ doz $3.65, dis 10 %
Pinching Irons....⅌ doz 7.50, dis 20 %

Curry Combs.
Fitch's (List of No. 240, $1)....dis 50 %
Hotchkiss' & Kellogg's, Iron & Brass, old list.dis 4 &7½ %
Hotchkiss' Novelty....dis 20&10 %
Rubber....⅌ doz $9.00, dis 20&10 %
Curtain Pins.—Silvered Glass....dis 15 %
White Enamel....dis 15 %

Cutlery.
Meriden Cutlery Co. (Table)....net
Am. Miller Bro.'s Cutlery Co....dis 25 %
Humason & Beckley, Pocket....dis 33⅓ %
Naugatuck Cutlery Co....list net
Aaron Burkinshaw's Pocket....dis 35 %

Dog Collars.
Embossed Gilt....dis 20 %
Leather....dis 30 %
Brass....dis 25 %

Door Springs.
Torrey's Rod....⅌ doz $1.75 net
Gray's "....⅌ doz $1.65, net
Gem (Coil)—
No. 1, Large, Japanned....⅌ doz $3.50 / No. 2, Medium, "....⅌ doz 2.50 / No. 3, Small, "....⅌ doz 2.00 } dis 15 %
Challenge (Coil)— Nos. 9 7 6
Japanned....⅌ doz $2.00 2.50 3.50
Coppered....⅌ doz 4.00 4.50 5.00
Galvanized....⅌ doz 3.50 4.00 4.50
Nickeled....⅌ doz 5.50 6.00 7.00 } dis 30 %
Premium (Coil)— Nos. 1 2 3
Japanned....⅌ doz $7.50 6.25 5.00
Nickeled....⅌ doz 11.00 9.50 8.00 } dis 30 %
Star (Coil)—For Cop'd, Nickel-Plated, &c., see list.
No. 4, ("Shoo Fly") Screen door size ⅌ doz $1.75 / No. 5, Screen Door Size....⅌ doz $2.00 / No. 6, Medium....⅌ doz 2.50 / No. 7, Large....⅌ doz 3.50 } dis 30 %
Sabin's Lever, No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 35 %
Sabin's Boss, No. 1, $5.40; 2, $4.20; 3, $3.60.dis ....50 %
Sabin's Crown....⅌ doz $2.75, dis 50 %
Philadelphia....5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed....dis 20 %
Cowell's....No. 1, $18.00; No. 2, $15.00 ⅌ doz, dis 50 %
Rubber, complete....⅌ doz $1.90, net

Drawing Knives.
Crossman's No. 1....dis 70&5 %
Merrill....dis 70 %
Nobles Mfg. Co....dis 15 %
Bradley's....dis 35 %
Adjustable Handle....dis 20 %
Witherby Tool Co....dis 70 %
Douglass....dis 70 %

Drills and Drill Stocks.
Blacksmiths'....each $1.80 net
Blacksmiths' Self Feeding....each $7.50, dis 10 %
Breast, P. S. & W....dis 25&10 %
" Hotchkiss....dis 25 %
Breast, Wilson's....dis 20 %
" Miller's Falls....each $2.50, dis 25 %
Ratchet, Merrill's....dis 25 %
" Ingersoll's (old list)....dis 35 %
" Whitney's....dis 30 %
" Weston's....dis 20 %
" Moore's Triple Action....dis 20 @ 25 %
Whitney's Hand Drill....dis 20&10 %
Wilson's Drill Stocks....dis 10 %
Automatic Boring Tools....each $2.75, dis 30 %
Drill Chucks.—Morse's Beach Patent....dis 30 %
" Adjust..each $10.00, dis 20 %
Danbury....$8.00, dis 30 %

Egg Beaters.
Dover....⅌ doz $5.00, dis 20 %
Family....⅌ doz $3.00 net
National....⅌ doz $4.50, dis 33⅓ %

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in., (Duc's Improved) ⅌ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ⅌ doz $5.60 @ $10.20, net
Storehouse, (Duc's Patent) 12 to 17, $12.00 @ $20.00...net

Emery and Emery Paper.
Genuine Chester—Regular Nos....⅌ ℔ 6c
" " Flour and FF....⅌ ℔ 5c
" " in 10-lb. cans....2c extra
Washington Mills—Regular Nos....⅌ ℔ 8c
" Flour....⅌ ℔ 5c
Wellington Mills, Grain....⅌ ℔ 10c net
" " Flour....⅌ ℔ 8c net
Hampden Emery Grain....5c net
" Flour....3c net
B. & A. Emery Paper....dis 20 %

Enameled and Tinned Ware.
Kettles....dis 45 %
Sauce Pans....dis 35 %
Tinned Sauce Pans....dis 35 %

Escutcheon Pins.
Iron....dis 33⅓ %
Brass....dis 35&10 %

Escutcheons.
Door Lock....Same discounts as Door Locks
Brass Thread....dis 60&10 %
Wood....dis 25 %

Faucets.
Fenn's....dis 50 %
Fenn's Cork Stops....dis 40 %
Star....dis 55&10 %
Frary's Patent Petroleum....dis 20&10 %
Wood and Metallic....dis 40 %
West's Patent Key....dis 40 %
Metallic Key, Leather Lined....dis 45 %
Cork Lined....dis 70&10 %
Enterprise (Self Measuring)....⅌ doz, $36.00, dis 20 %
Felloe Plates....⅌ ℔ 15c, dis 50 %

Files.
American File Co....$5.00 to £, dis 35 %
Auburn....$5.00 to £, dis 35 %
Arcade....$5.00 to £, dis 35 %
G. & H. Barnett....dis 25 %
Nicholson....(Nicholson List) dis 35 %
Heller & Bros....$5.00 to £ dis 25 %
Madden & Cockayne File Co....$5.00 to £, dis 25 %
J. & Riley Carr....4.50 to £
Stubs'....$7.00 @ 7.50 to £
Butcher's....4.50 to £
Walter Spencer & Co.'s "Diamond"....4.50 to £
Fisher's....4.75 to £
Moss & Gamble....4.50 to £
H. Disston & Sons (new list)....dis 35 %
Limet & Co. (French)....$4.25 to £

Fluting Machines.
Knox, 4-inch Rolls....$2.50 each net
" 6 " ....3.00 each net
" 8 " ....5.00 each net
Peerless, 4-inch Rolls....4.00 each net
" 5 " ....4.75 each net
Eagle, 3½-inch Roll....$1.62½ each net
" 5½ " ....$2.12½ each net
Eureka, No. 1, 7-inch Roll....6.50 each, dis 33⅓ %
" No. 2 5-inch Roll....5.50 each, dis 33⅓ %
Crown....4½-in., $2.62½; 6-in., $3.00; 8-in., $5.00 each net
Star....4½ in., $3.50; 6 in., $4.00 each net
Crown Jewel....0 in., $2.50 each net
Domestic Fluter....1.50 each net
Geneva Hand Fluter, No. 1....⅌ doz $15, dis 20 %
Crown Hand Fluter....⅌ doz. $12. net
Shepard Hand Fluter....No. 75 ⅌ doz $15, dis 10 %
" " " ....No. 104, ⅌ doz $12.00 net
Clark's Hand Fluter....⅌ doz $15.00, dis 20 %
Combined Fluter and Sad Iron....⅌ doz 15.00, dis 30 %
Buffalo....⅌ doz 10.00, dis 10 %
Fluting Scissors....dis 45&10 %

Forks.
Hay, Manure and Spading....new list, dis 15 %
Plated "A 1, Rogers & Bro....dis 40&5 % cash
" Reed & Barton....dis 40&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co....dis 20 %

Fry Pans.
Burnished, list as follows....dis 60&10 %
No.... 0 1 2 3 4 5 6 7 8
⅌ doz....$3.00 $3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
Acme Patent, same list as above....dis 45 %

Gauges.
Marking, Stanley's....dis 50&10 %
" Chapin's....dis 50&10 %
" Star....dis 35 %
Wire....dis 10 %
" Smith's Patent....⅌ doz $18.00, dis 40 %

Gimlets.
Nail and Spike....dis 55 %
"Bee" Gimlets....⅌ gross $12.00, dis 60&10 %
"Eureka" Gimlets....dis 50 %
"Diamond" Gimlets....dis 20&10 %
Double Cut, Shepardson's....dis 40 %
" " Hartwell's....dis 50 %
" " Ives'....dis 55 %
" " Douglass'....dis 40

Glue Pots.
Tinned and Enameled....dis 50 %
Family, Howe's "Eureka"....dis 30 %
" L. F. & C.'s "Handy"....dis 40 %

Grindstone Fixtures.
Sargent's Patent....dis 75&10 %
Reading Hardware Co....dis 40&10&2 %
" " "Keystone"....dis 45&5&10&2 %

Hammers.
Maydole's, New List of Dec. 10th, 1878....dis 15 %
Cheney's, List January, '79....dis 25 %
H. Hammonds....dis 20 %
Verree....dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75 dis 25&10 %
Warner & Noble's....dis 10 %
Kip's (new list, Dec. '78)....dis 25 %

Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ⅌ doz / " " Leg Irons, $25 ⅌ doz } dis 10 %
Tower's....dis 25 %
Handles.—Door or Thumb Latches—
Nos.... 0 1 2 3 4
Per doz....$0.80 1.00 1.18 1.35 1.50....dis 70&10 %
Roggin's Latches....per doz 30 @ 33c net
Bronzed Iron Drop Latches....⅌ doz 60 @ 80c net
Jap'd Store Door Handles—Nuts, $1.25; Plate $0.80
no Plate, 65c....net
Barn Door....per doz $5.00, dis 70&10&10 %
Wrought Chest....dis 70 %
Surface Chest, Sargent's list....dis 75&10 %
Flush Chest....dis 70&10 %
Lifting....dis 70 %
Saw and Plane....dis 40&10 %
Hammer and Hatchet....dis 20 %
Brad Awl....⅌ gross $2.00, dis 25&10 %
Hickory Firmer Chisel, assorted, ⅌ gross $4.50
" " large, " 5.00
Apple " " assorted, " 5.00
" " " large, " 6.00
Socket " " assorted, " 3.00
" Framing " assorted, " 5.00
File, assorted, ⅌ gross....2.75
Auger, assorted, ⅌ gross....6.00
" large, "....7.00 } dis 25&10 %
Patent Auger, Ives'....dis 25&10 %
" Douglass'....⅌ set $1.25, dis 10 %
" Swan's....⅌ set $1, dis 20&10 %

Hangers.
Barn Door....dis 70&10&10 %
Novelty....dis 40 %
Challenge....dis 50 %
Climax (Anti-Friction)....dis 50&10 %
Sterling Improved (Anti-Friction)....dis 75&10 %
Cheritree....dis 20 %

Harness Snaps.
Henshaw's....List of 1½ changed to $14.00, dis 55 %
Judd's....." " " 14.00, dis 60 %
Fitch's (Bristol) " 14.00, dis 55 %
Hotchkiss'....dis 10 %
Andrews'....dis 50 %
Sargent's....dis 66⅔&10 %
New York Wire....dis 20&10 %
"German"....dis 70 %

Hatchets.
Isaiah Blood....dis 30 %
Shingling, Nos. 1 2 3....⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3....⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3....⅌ doz 7.50 8.00 8.50
Hunt's....dis 20 @ 10 %
Shingling, Nos. 1 2 3....⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3....⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3....⅌ doz 7.50 8.25 9.00
Hurd's....dis 45 %
Shingling, Nos. 1 2 3....⅌ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3....⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3....⅌ doz 8.00 8.50 9.00
Simmon's....dis 35 %
Shingling, Nos. 0 1 2 3....⅌ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3....⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3....⅌ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4....⅌ doz 9.00 10.00 12.00 14.00
" Nos. 5 6 7 8....⅌ doz 16.00 18.00 20.00 22.00
Collins....dis 10 %
Shingling, Nos. 1 2 3....⅌ doz $6.00 $6.50 $7.00
Claw Nos. 1 2 3....⅌ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3....⅌ doz 6.00 6.50 7.00
M. H. Jones & Co....dis 45 %
Shingling, Nos. 1 2 3....⅌ doz $8.00 $8.50 $9.00
Half Hatchets, Nos. 1 2 3....⅌ doz 8.00 8.50 9.00
Claw, Nos. 1 2 3....⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3....⅌ doz 8.00 8.50 9.00
Broad, Nos. 2 3 4....⅌ doz 11.00 13.00 14.50
" Nos. 5 6 7....⅌ doz 16.50 18.00 19.50

Hay Knives.
"Lightning"....⅌ doz $20.00 net
Wadsworth's....dis 30 %

Hinges.
Gate, Western....⅌ doz $6.25, dis 70&10 %
" N. E....⅌ doz $10.13, dis 70&10 %
" N. E. Reversible....⅌ doz $10.13, dis 70&10 %
Gate, Clark's No....⅌ doz $6.00, dis 50&10 %
" N. Y. State....⅌ doz $6.10, dis 70&10 %
" Automatic....⅌ doz $12.50 dis 40 %
" Common Sense....dis 20 %
" Seymour's....dis 40&10 %
" Shepard's....No. 25 ⅌ doz $6.00, dis 50 %
Rolled Blind Hinges....dis 60&10&10 %
Rolled Plate....dis 60&10 %
Rolled Raised....dis 60&10 %
Wrought Strap and T, list Dec. 20, '77....dis 60&10 %
Plate Hinges / "Providence"... { 6 to 10 in. 50 ⅌ ℔ / over 10 in. 40 ⅌ ℔ } ....dis 10 %
Screw Hook and Strap....{ 8, 10, 12 in., 11c / 14 to 36 in., 9¼c } dis 50&10 %
Heavy Welded Hook....{ 8 to 12 in., 11c / 14 in. & up, 9¼c } ..dis 30 %
Screw Hook and Eye....{ ⅞ & 1 in., 10c / ¾ in. 12c / ⅝ in. 14c / ½ in. 16c } dis 35 %
Hoes.—Solid Shank, C. S....⅌ doz $5.25, dis 15 %
Socket....⅌ doz 5.75, dis 15 %
Riveted Shank....⅌ doz 3.25 dis 15 %
Grub....dis 30 %
Planters'....dis 30 @ 35 %
Scovill Pattern....dis 25 @ 30 %
Scovill Pattern, Handled....dis 25 %
Hick's Pat. Solid C. S. Planters'....dis 20&10 @ 30 %
" " " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters....dis 25@30 %
" " Scovill Pattern....dis 20@25 %

Hooks.
Bird Cage, Sargent's list....dis 70&10@70&10&10 %
Cotton....dis 50 %
Cotton (Humason & Beckley Mfg. Co.)....dis 40 %
Belt, (new list) ⅌ c....dis 30&10 %
Bench—Hotchkiss', $5.00 ⅌ doz....dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ⅌ doz dis 25 %
" McGill's, $3.00 ⅌ doz....dis 10 %
" Skinner's, $6.25 per doz....dis 20 %
Clothes Line, Hart's list....dis 60&10&5&10 %
" Sargent's list....dis 70&10&10 %
" Reading list....dis 50&10&2 %
Ceiling.. / Harness. { Hart's list....dis 70&10 % / Sargent's list....dis 70&10 % / Reading list....dis 50&10&2 %
Coat and Hat, Hart's list....dis 65&5&10 %
" " Sargent's list....dis 70&10 %
" " Reading....dis 50&10&2 %
" " T. & S. Mfg. Co's list....dis 25 %
Tassel (T. & S. Mfg. Co.)....dis 40 %
Wrought Staples and Hooks and Staples, dis 75&10 @ 80 %
" Staples, Stanley's list....dis 40 %
Wire Screw Hooks and Eyes....dis 70&10 %
Grass and Bush....dis 40@45 %
Whiffletree—Patent....dis 40 %
Hooks and Eyes—Malleable Iron....dis 70&10 %
" Brass....dis 70&10 %

Horse Nails
Nos. 5 6 7 8 9 10
Ausable....⅌ ℔ 30c 27c 25c 24c 23c 22c } dis 20 %
" Finished, Polished or Blued... " 31c 28c 26c 25c 24c 23c
A. C.... 60 50 40 26 24 22 21 20 19 18 18 18c } dis 15 %
Nos. 1 2 3 4 5 6 7 8 9 10 11 12
Bridgewater Iron Co. / Pointed and Polished } Nos. 5 6 7 8 9 10 — 26c 23c 21c 20c 19c 18c
Nos. 5 6 7 8 9 10
Cortland P't'd & Blued.. 26c 23c 21c 20c 19c 18c
Globe (New list).. Nos. 5 6 7 8 9 10 — 26 23 21 20 19 18c net
H. P. Pointed and Finished.... 26 23 21 20 19 18 } dis 20 %
North Western Fini'h'd 26 23 21 20 19 18c net
" " Plain 25 22 20 19 18 17c net
National, Pointed and Polished, Pat. Fin.... 25 23 22 21 20c net
Putnam Hammer, P't'd 26 23 21 20 19 18c net
Vulcan P't'd & Blued. 26 23 21 20 19 18c net
Horse Shoes.—Burden....⅌ keg $3.37½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy....⅌ keg 3.37½
Mule Shoes....⅌ keg 4.37½
Perkins' Snow....⅌ keg 3.87½

Ice Awls, Chisels, &c.
American Ice Chisel....⅌ doz. $6.00 dis 45 %
National " ....⅌ doz $6.25 dis 20 %
Novelty Ice Breakers....⅌ doz $6.25 dis 20 %
White's Sliding Head Picks....⅌ doz $2.50 dis 40 %
Dunlap's Ring Picks....⅌ doz $3.00, dis 25%
Wood Head Picks, Sargent's ⅌ doz $1.85, dis 60&10&10 %
Iron " ⅌ doz 1.85, dis 60&10&10 %
Ice Mallets Pick in Head....⅌ doz 1.75 net
" Pick in Handle....⅌ doz 3.00 net
Ice Axes, Small Cast or Malleable....⅌ doz 1.20 net
Kitchen Ice Tongs....⅌ doz 2.25 net
Combination Ice Tools....⅌ doz $2.50 dis 30&10 %

Kettles.
Brass, 7 to 13 inches inclusive....⅌ ℔ 35c net
Brass, larger than 13 inches....⅌ ℔ 40c net
Enameled....dis 45 %

Knives.
Ames' Butcher Knives....dis 20 %
" Shoe....dis 15 %
" Bread....⅌ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives....dis 20 %
Hay and Straw—'Wadsworth's'....dis 30 %
Table and Pocket....See Cutlery

Knobs.
Carriage (Jap'd 80c. ⅌ gross)....dis 60&10 %
Base—Common....dis 30&10 %
" Elastic End, No. 8....dis 70 %
Hemacite Door Knobs....dis 35 %
Door, Mineral / " Por. Jap'd / " " Plated / " " Por. } Same discounts as Door Locks.
Furniture, Plain....75c gross inch, dis 10 %
" Wood Screws....dis 20 %
Picture (T. & S. Mfg. Co.)....dis 50 %
" Sargent's....dis 60&10&10 %
Hemacite Picture....dis 35 %
Shutter, Porcelain....dis 60&10&10 %

Ladles.
Melting—Hart's....dis 55&10 %
" Sargent's....dis 50&10 %
" Reading....dis 35&10&2 %
" Monroe's Patent....⅌ doz $4.00, dis 20 %

Lanterns.
Tubular....No. 0, $10.00; No. 1, $11.50 / With Guards, 50c extra. } net
Hurricane....dis 25 %
Peerless....No 5, ⅌ doz $11.75, dis 10&10 %
Brady's Patent....dis 10&10 %
Ætna....dis 10&10 %
Yankee....dis 10&10 %
De Beque....dis 10&10 %
Police..Small, $7.50; Med., $9.00; Large, $12.00, dis 20&10 %
Convex Reflector....$3.60 ⅌ doz, dis 10 %

Lemon Squeezers.
Porcelain Lined....⅌ doz $4.00 net
Eureka, Tinned....⅌ doz $8.00, dis 10 %
Dunlap's Improved....⅌ doz $4.00 net
Sammis'....No. 1, $7.50; No. 2, $12.00 ⅌ doz., dis 55 %
Townsend's Patent....$6.00 ⅌ doz., dis 33⅓ %

Lines.—Linen Fish....dis 25&10 %
Cotton Chalk....dis 55 %
Sil. Lake Chalk....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50....dis 15&10 %
Mason's Linen....dis 25&10 %
Wire Clothes, Galvanized....each 30 @ 40c net

Locks and Latches.
Cabinet—Eagle / " Gaylord / " Bridgeport } Reduction in list of some numbers March 1, 1879. ....dis 25&2 %
" Barnes & Deitz....dis 30 %
Trunk....dis 25 %
Langstroth & Crane's List Jan. 1, '77.
Round Key....dis 40&10 %
Flat Key....dis 33⅓&10 %
Barnes & Deitz, Flat Key....dis 30 %
Yale Lock Co., Flat Key....dis 40 %
Shepardson's, Flat Key....dis 35 %
American Lock Mfg. Co....dis 33⅓ %
Plate....dis 33⅓&5&2 %
F. Many's "Extension Cylinder"....$10.50 ⅌ doz, net
DOOR LOCKS, &C.
Branford....dis 60&10&2 %
Norwalk....dis 50&10&2 %
Norwich....dis 50&10&2 %
Russell & Erwin....dis 70&2 %
Mallory, Wheeler & Co....dis 35&10&2 %
Reading Hardware Co....dis 35&10&2 %
Trenton....dis 40&5&2 %
Continental....dis 33⅓ %
Padlocks—Russell & Erwin / " Mallory, Wheeler & Co. / " Wm. Wilcox & Co. } ....dis 33⅓&5 % and 2 % for cash
" American Lock Mfg. Co....dis 33⅓ %
" Romer's....dis 30 %
" Conestoga....dis 60 %
" J. H. McWilliams....dis 10 %
" Barnes & Dietz....dis 35 %
" Penn Lock Works....dis 30 %

Mallets.—Hickory and Lignumvitæ....dis 10&10 %

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 2 3 4
⅌ doz..$14.00 17.00 19.00 30.00—dis 25
Miles' Challenge....Nos. 1 2 3
⅌ doz..$22.00 30.00 40.00—dis 30 %
Perry's Nos. 1 2 3 4 4 g'rd 5 g'rd
Each....$3.00 4.00 5.00 11.00 13.00 36.00—dis 40 %
Woodruff's (P. S. & W.)....Nos. 100 150
⅌ doz..$15.00 18.00—dis 40 %
Hales'....Nos. 11 12 13
⅌ doz..$33.00 40.00 51.00—dis 50&2 %
Draw Cut....Nos. 5 2 6 8 10
Each..$50.00 75.00 80.00 225.00 400.00—dis 20 %
American....dis 25 %
Nos.... 1 2 3 4 B 5
Each....$5.00 7.00 10.00 25.00 50.00 60.00

Mincing Knives.
Am., 1 blade, $16; 2 blades, $27; 3 blades, $37 per gross....dis 10@20 %

Molasses Gates.
Stebbins Pattern....dis 62½&10 %
" Genuine....dis 65&10 %
" Tinned Ends....dis 40&10 %
Chase's Hard Metal....dis 30 %
Bush's....dis 20 %
Lincoln's Genuine....dis 62½&10 %
Weed's....dis 15 %
Nails....See Trade Report

Nuts and Washers.
Square Nuts....7c off list
Hexagon Nuts....8c off list
Washers....7c off list

Nut Crackers
Table (Humason & Beckley Mfg. Co.)....dis %
Blake's Pattern....⅌ doz $2.00, dis 10 %

Oakum.
Best....⅌ ℔ 9½c
U. S. Navy....⅌ ℔ 8½c
Navy....⅌ ℔ 7c
Oilers.—Zinc and Tin....dis 55&10 %
Brass and Copper....dis 55 %
Olmsted's....dis 40&10 %
Broughton's....dis 40 %
Malleable (Hammer's)....⅌ doz $5.00, dis 10 %
Prior's Patent or "Paragon," Zinc....dis 55&10 %
" " Brass....dis 55 %
Ox Balls....dis 60&10 %

Pencils.
Faber's Carpenters'....dis 10 %
" Round Gilt....⅌ gross $5.25 net
Dixon's Lead....⅌ gross 4.50 net
" Lumber....⅌ gross 7.50 net

Packing, Steam.
N. Y. Belting and Packing Co....new list net

Picture Nails.
Brass Head, Sargent's List....dis 60&10 %
" T. & S. Mfg. Co....dis 50 %
Porcelain Head, Sargent's List....dis 60&10 %
" " Judd's List....dis 40 %
Porcelain Head, T. & S. Mfg. Co....dis 40 %
Pinking Irons....⅌ doz 75c, net

Plaiting Machines.
Magic....⅌ doz $10.00, net
Astor Plaiting Machine....each $15.00, dis 20 %
Crown Plaiting Machines....dis 25 %
6in., $6.00. 10in., $10.00, each.

Planes and Plane Irons.
Bench, First Quality....dis 35&10 %
" Second "....dis 50&10
Moulding....dis 35&10 %
Bailey's (Stanley R. & L. Co.) new list Jan. '79. dis 25&10 %
The Stanley (S. R. & L. Co.) " " dis 25&10 %
Bailey's "Victor"....dis 25&10 %
Defiance Adjustable, new list....dis 25&10 %
Plane Irons, Butcher's....$5.50 to £
" Buck Bros....$5.00 to £
" Auburn Tool Co.'s....dis 25 %
" Defiance....dis 25&10 %
" Middletown Tool Co....dis 10 %
" Ohio Tool Co....dis 20&10 %
" Spear & Jackson's....$5.00 to £
" Sandusky Tool Co....dis 10&10&10 %

Pliers and Nippers.
Button's Patent....dis 33⅓ %
Hull's Patent Nippers, No. 1, $15; No. 2, $21 ⅌ doz, dis 25 %
Humason & Beckley Mfg. Co....dis 33⅓ %
Gas Pliers....dis 45 %
Eureka Pliers and Nippers....dis 25 %
Russell's Parallel....dis 25 %
P. S. & W. Cast Steel....dis 35 %
" " End Cutting Nippers....dis 25 %
" Tinners' Cutting Nippers....dis 20 %

Plumbs and Levels.
Disston's....dis 70 %
Stanley R. & L. Co.'s Pat. Adjustable....dis 65&10 %
" " " Non-Adjustable....dis 65&10 %
Chapin's Patent Adjustable....dis 65&10 %
" Non-Adjustable....dis 65&10 %
Standard Rule Co.'s New Adjustable....dis 60&10 %
" Non-Adjustable....dis 60&10 %
Johnson's Patent Adjustable....dis 60&10 %
Davis' Patent....dis 60&10 %
Pocket Levels....dis 55&10 %

Post Hole and Tree Augers.
Samson Post Hole Digger....per doz $36.00, dis 20 %
Fletcher Post Hole Augers....⅌ doz 36.00, dis 20 %
Vaughan's Post Hole—
6 in. $23.60; 7, 8 and 9 in. $25 per doz....dis 20 %
Leed's....$5.00 each, dis 45 %
Eureka....⅌ doz $40.00, dis 40 %

Potato Parers, &c.
Bay State....⅌ doz $13.00 dis 10 %
Saratoga" Peeler and Slicer....⅌ doz 7.75 dis 10 %

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw per doz $18.00, dis 20 %
" Pruning Hook....⅌ " 11.50, dis 20 %
Pruning Shears....⅌ doz $4.50@$5.00 net

Pulleys.
Judd's Axle....⅌ doz $0.50, dis 40 %
Hot House and Tackle....dis 70&10 %
Jap'd Screw....dis 70&10 %
Brass Screw....dis 60&10&10 %
Jap'd Side....dis 70&10 %
" Clothes Line....dis 70&10 %
Hay Fork Solid Eye, $4.50; Swivel, $5.00, dis 40&10&10 %
" " "Anti-Friction,"....$7.50 dis 20 %
" " "F" Common and Pat. Bushed....dis 20 %
" " Tarbox Pat. Iron....dis 30 %
Shade Rack....dis 50 %

Punches.
Belt or Drive....⅌ doz $2.00; 2.25; 2.50, dis 45 %
Bemis & Call Co.'s Cast Steel Drive....dis 40&30 %
" " Springfield Socket....dis 40&10 %
Spring....⅌ doz $7.00, dis 50 %
" Leach's Patent....dis 15 %
Bemis & Call Co 's Spring and Check....dis 50 %
Solid, Tinners'....⅌ doz $1.44, dis 35@10 %

Rail.
Sliding Door Wrought Brass..⅌ ℔ 38c dis 10&10 %
" " Iron, Painted....⅌ foot 9c, dis 60 %
Barn Door, ⅛, ⅝ and ¾ inch....dis 75&10 %
" for N. E. Hanger....dis 70&10 %

Rakes.
Cast Steel....dis 15 %
8 10 12 14 16 teeth.
$5.00 5.75 6.50 7.25 8.00
Malleable....dis 15 %
10 12 14 teeth.
$3.60 4.00 4.40

Razor Straps.
Genuine Emerson....dis 33⅓ %
Badger's Emerson....dis 33⅓ %
Badger's (not Emerson)....dis 25 %
Evans'....dis 40 %
Imitation Emerson....⅌ doz $2.75, dis 40&10 %
Hunt's....dis 40&5 %
Chapman....dis 15 @ 20 %
Torrey's....dis 25 %
Saunders'....dis 15 @ 20 %

Rivets.
Iron and Tinned....dis 50 %
In bulk, new list of Jan. 10, 1878....dis 40 %
Copper Rivets and Burs....dis 50 %
Nos.... 7 8 9 10 11 12 13 14 15
⅌ ℔..49c 50c 52c 54c 56c 58c 60c 64c 70c
Tinned Iron Belt Rivets and Burs....dis 40 %
Rivet Sets....dis 35&10 %

Rods.
Stair....New list, March 1, '79, dis 33⅓ %
" American Patent....dis 40 %

Rollers.
Barn Door, Sargent's list....dis 70&5&10 %
Novelty....dis 10 %
Acme (Anti-Friction)....dis 60 %

Rope. Manufacturers' Net List, December, 1878.
Manila....½ inch and larger ⅌ ℔ 11¼c
" ....⅜ inch ⅌ ℔ 11¾c
" ....¼ and 5-16 inch ⅌ ℔ 12¼c
" Tar'd Rope....⅌ ℔ 10¾c
" " Lath Yarn....⅌ ℔ 12¼c
" Hay Rope....⅌ ℔ 11¼c
Sisal....½ inch and larger ⅌ ℔ 9¼c
" ....⅜ inch ⅌ ℔ 9¾c
" ....¼ and 5-16 inch ⅌ ℔ 10¼c
" Hay Rope....⅌ ℔ 9¼c

Rules. Boxwood Ivory.
Chapin's / Standard / Willis, Thrall & Son / Stephens / Stanley } dis 70 &10 % } dis 60 &10 %

Sad Irons.
From 4 to 10 lbs....⅌ ℔ 2½@2¾c net
Self-Heating....⅌ doz $8.75 net
" Tailors'....⅌ doz $18.50 net
Gleason's Shield and Toilet....dis 25 %
Enterprise Patent Cold Handle....dis 33⅓ %
Mrs. Pott's Pat. Cold Handle, "Crown"....dis 33⅓ %
Combined Fluter and Sad Iron..per doz $15.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.25 ⅌ ream
" " " 2, 2½ & 3. 4.75 ⅌ ream
" " " Assorted 4.25 ⅌ ream
" " Star....3.25 ⅌ ream
" " Emery..⅌ ream $6.50 @ 11.50 } dis 20 %
New England, same list as B. & A. Flint....dis 20 %
Gaze's....dis 20&5 %

Sash Cord.
Common....⅌ ℔ 16 @ 15c net
Patent....⅌ ℔ 18c net
Silver Lake, Russia Flax....⅌ ℔ 55c net
" White Cotton....⅌ ℔ 55c net
" Drab Cotton....⅌ ℔ 60c net
Raw Hide....dis 25 %
Steel Ribbon....dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross...dis 45@50 %
Ferguson's....dis 33⅓ %
Walker's....dis 10 %
Hammond's Window Springs....dis 25 %
Northup Window Springs....$9.00 per gross, dis 10 %
The Perfect, Clark & Smith, Plain Jap'd ⅌ gro $10.00 net
" " Por. Knob Jap'd. ⅌ gro 14.00 net
" " Nickel-Plated...⅌ gro 27.00 net
Sash Weights.—Solid Eyes....⅌ ℔ 1 @ 1¼c

Sausage Stuffers or Fillers.
Miles....⅌ doz $20, dis 30 %
Perry....⅌ doz, No. 1, $15; No. 0, $21, dis 40 %
Draw Cut No. 4....each $30.00, dis 20 %
Enterprise Mfg. Co....dis 20 %
Silver's....dis 25 %

Saws.
Disston's Circular....dis 35 %
" Mill....dis 20 %
" Cross Cut....dis 20 %
" Hand, Panel, Rip, &c....dis 20 %
Boynton's Lightning, Cross Cuts, new list....dis 30 %
" One-Man, all lengths....dis 25 %
" Billet Webs, 30 in....⅌ doz $8.00, dis 30 %
Wheeler & Clemson Mfg. Co.'s Hand....dis 20 %
" " Cross-Cut....dis 35 %
Livingston's Butcher and Kitchen....dis 20 %
" Framed Wood—
Nos.... 101 102 103 104 105
Per doz..$10.00 8.[illegible] 10.00 7.50 6.25 net

Saw Frames.
White, Vermont....⅌ doz $1.35, dis 25 %
Red, Polished and Varnished....⅌ doz $2.00, dis 25 %
Saw Rods....$10 list dis, 10&10 %

Saw Sets.
Boynton's Patent....per doz. $10.00, dis 30 %
Stillman's Genuine....⅌ doz $3.38@$4.50 net
" Imitation....⅌ doz $3.25, dis 35 %

Common Lever..........per doz $2.00, dis 35 %
Leach's..........No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's..........No. 1, $8.50; No. 2, $5.50, dis 20&10 %
Hammer, Hotchkiss..........$5.50, dis 10 %
" Bemis & Call Co.'s New Pat..........dis 40&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 35&10 %
" " Plate and Cross Cut..........dis 20 %
Aiken's Genuine..........$13.00, dis 50 %
" Imitation..........$7.00, dis 55 %
Hart's Patent Lever..........dis 20 %
Disston's..........dis 20 %

Scales.
Hatch, Counter, No. 171..........₩ doz $36, dis 45&10 %
" Tea, No. 161..........₩ doz $15.00 dis 55 %
Union Platform..........$6.00, dis 55 %
Turnbull's Market..........dis 20 %
Fairbanks'..........dis 20&5 %
Howe's..........dis 20&5 %
Chatillon's Grocers'..........dis 40 %
" Eureka..........dis 20 %
Family Universal..........dis 25 %
" Favorite..........dis 40 %
" Turnbull's..........dis 25 %
Scale Beams, Chatillon's list..........dis 25 %
" Sargent's list..........dis 60&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.50 dis 25&10 %
Box, 1 Handle..........₩ doz $5.00, dis 10 %
" 2 "..........₩ doz 6.00 dis 10 %
Defiance Box and Ship..........dis 25&10 %
Foot..........dis 70&10 %
Ship (common)..........per doz $3.00 net
" (Providence Tool Co..........dis 10 %

Screw Drivers.
Hart, Bliven & Mead..........dis 45&10&2 %
Douglass Mfg. Co..........dis 35&1 %
Disston's..........dis 52½ %
Disston's Patent Excelsior..........dis 52½ %
Buck Bros..........dis 25 %
Stanley Rule & Level Co., Varnished Hdls..dis 50&10 %
" " " Black Handles...dis 40&10 %
Sargent & Co.'s..........dis 60&10 %

Screws.
Flat H'd Iron..........dis 60 %
Round Head Iron..........dis 45 %
Flat Head Brass..........dis 45 %
Round Head Brass..........dis 30 %
Brass and Silver Capped..........dis 40 %
Japanned, list of Plain Screws..........dis 55 %
Lag or Common Coach..........dis 70&5 %
Coach Patent Gimlet Point, List per 100..........dis 65 %
Bed..........dis 10@10 %
Machine, Flat Head, Iron, Am. Screw Co..........dis 25 %
" Round Head, Iron, "..........dis 20 %
Bench, Iron..........dis 60&10 %
" Wood, Beech..........₩ doz $3.00, dis 10 %
" " Hickory..........dis 20&10 %
Hand..........dis 25&10 %
Hand Rail, Sargent's..........dis 70&10 %
" " Humason, Beckley & Co.'s..........dis 40&10 %
Jack (Wilson's)..........dis 35 %
Sash (T. & S. Mfg. Co.)..........dis 25 %

Shears and Scissors.
Cast Steel..........dis 80&10 %
" Iron, 'American'..........dis 60 %
Seymour's Straight Trimmers..........dis 65 %
" Scissors..........dis 65 %
Pruning..........see Pruning Hooks and Shears.
Barnard's Lamp Trimmers..........₩ doz $3.75
Tinners'..........dis 20 %
Heinisch Trimmers and Scissors..........dis 60 %
" R. H. S. " "..........dis 65 %

Sheaves.
Sliding Door, M. W. & Co., list..........dis 35&10&2 %
" R. & E. list..........dis 50&2 %
" Patent Roller..........dis 25&2 %
" " " Hatfield's..........dis 50&2 %
" Russell's Anti-Friction..........dis 50&2 %
" Moore's Anti-Friction..........dis 45 %
Sliding Shutter, R. & E. list..........dis 50&2 %
" " Sargent's list..........dis 55&10 %
Moore's Anti-Friction (Hanging)..........dis 45 %
Philadelphia Hanging..........dis 40&5&2 %

Shovels and Spades.
Ames, New list, Jan. 1, '79..........dis 20 %
Kimball Shovel Co..........dis 20 @ 20&5 %
Old Colony..........dis 30 %
Remington's (Lowman's Patent)..........dis 30 %
Dunning's Shovels and Scoops..........dis 30&7½ %
B. Rowland's "Regular," new list..........dis 60 %
" Patent, new list..........dis 40&5 %
Oxford Patent, new list..........dis 40&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list..........dis 50&2 %
" " Hart's..........dis 50&10&2 %
Polished Steel..........new list, dis 50&10&2 %

Slates.
Square Frames, Round Cornered, by case..........dis 70 %
Less than a case..........dis 60&10 %

Spoke Shaves.
Defiance Metallic..........new list, dis 25&10 %
Iron..........dis 40&10 %
Wood..........dis 30 %
Bailey's (Stanley R & L. Co.) new list..........dis 25&10 %

Spoke Trimmers.
Bonney's..........₩ doz $10.00, dis 40 %
Stearn's..........₩ doz $10.00, dis 40 %
Ives'..........No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 50&10 %
Douglass'..........₩ doz $9.00, dis 20&10 %

Spoons.
Tinned Iron..........dis 20 %
Basting..........dis 35 %
Britannia..........dis 65&10 %
Derby Silver Co..........dis 40&5&5 %
L. Boardman's Sons, A1..........dis 40&5&5 %
Rogers & Bro., A 1..........dis 40&5 % cash
Rogers Cutlery Co..........dis 40&5&5 %
Reed & Barton..........dis 40&5 %
Hall & Elton..........dis 40&5 %
Holmes, Booth & Haydens..........dis 40&5 %
German Silver..........dis 30&10&5 %
Diamond Steel (L. Boardman's Sons)..........dis 30&5 %
Tin (P. S. & W.), Teas..........$1.50 ₩ gross, net
" " " Tables..........$2.50 ₩ gross, net
Tin Cowles Hdw. Co.)..........dis 10 %
" " case lots..........dis 20 %

Stocks and Dies.
"Lightning" Screw Plate..........dis 5&10 %
..........dis. 10 %

Stone.
Hindostan Stone..........₩ ℔ 6c } dis 30&10 %
" Ax Stone..........₩ ℔ 8c }
" Slips..........₩ ℔ 10c }
Sand Stone..........₩ ℔ 6c, dis 30&10 %
Washita Stone..........No. 1, ₩ ℔ 20c net
" "..........No. 2, ₩ ℔ 15c net
" Slips..........No. 1, ₩ ℔ 45c net
Turkey Oil Stone (Boyd & Chase)....4 to 8in, $1.00 ₩ ℔, dis 10 %
" Slips "..........$2.50 ₩ ℔, dis 10 %
Lake Superior (Boyd & Chase)..........₩ ℔ 20c, dis 10&5 %
" " Slips..........₩ ℔ 45c, dis 10&5 %
Grindstones, Family, Loring's..........dis 10 %

Stove Polish.
Joseph Dixon's..........₩ gross $6.00, dis 5 %
Gem..........₩ gross $4.50, dis 5 %
Gold Medal..........₩ gross $6.00, dis 25 %
"Mirror"..........₩ gross $6.00, dis 5 %
Ruby..........₩ gross $3.75, net
Rising Sun..........₩ gross $5.75, net
Dixon's Plumbago..........₩ ℔ 8c, net

Squares.
Steel..........dis 50 %; full cases, dis 50&10 % } 2 % cash
Iron..........dis 50 %; full cases, dis 50&10 % }
Nickel Plated..........add $2.50 @ $4.00 ₩ doz, net }
Try Squares and T Bevels..........dis 50&10 %
Star Try Squares and Bevels..........dis 35 %
Disston's Try Squares and T Bevels..........dis 52½ %
Winterbottom's Try and Mitre..........dis 25&10 %
Bailey's Try Squares and T Bevels..........dis 25&10 %

Tacks, Brads, &c.
List of May, 1878..........dis 55 %
Shoe Nails, (new list)..........dis 10 %
Double-Pointed Tacks..........dis 40&5 %

Tap Borers.
Common and Ring..........dis 20&10 %
Ives' Tap Borers..........dis 10&10 %
Enterprise Mfg. Co..........dis 20 %

Tapes, Measuring.
American..........dis 25 %
Spring Tapes..........dis 25&10 %

Thermometers.
Tin Case..........dis 70 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)..........dis 20 %
Wood Bottom..........₩ doz $12.00, dis 40@45 %
All Iron..........₩ doz $10.50, dis 40&5 %
Nashua Lock Co.'s..........₩ doz $18.00, dis 50 %

Toe Calks.—Winsted..........₩ ℔ 10c, dis 10 %

Tinners' Tools and Machines.
Machines (P. S. & W.)..........dis 5@10 %
Tools (P. S. & W.)..........dis 15@20 %

Traps.
Game, Newhouse..........dis 33⅓ %
" Newhouse Pattern..........dis 60&10 %
" Blake's Patent..........dis 40&10 %
Mouse, Wood, Choker..........₩ doz holes, 12 @ 13c
" Round Wire..........₩ doz $1.50, dis 10 %
" Cage "..........₩ doz $2.50, dis 10 %
" Patent Self Setting..........₩ doz holes, 25c, net
" Catch-em-alive..........₩ doz $2.75, dis 10 %
Rat, "Decoy"..........per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering..........dis 15 @ 10 %
Reed's Brick and Plastering..........dis 15 %
Disston's Brick and Plastering..........dis 20 %
Peace's Plastering..........dis 20 %
Clement & Maynard's..........dis 20 %
Rose's Brick..........dis 20 %
Brades' Brick..........dis 20 %
Worrall's Brick and Plastering..........dis 20 %
Garden..........dis 50 %

Triers.
Butter and Cheese..........dis 25 %

Vises.
Solid Box, Trenton....New List, Jan. 22, '79, dis 35 %
" Wilsons.......New List, Jan. 22, '79, dis 35
" "Crown" (A. H. Hildick's) 40 to 100 lbs., 15c currency..........dis 20 %
" Park, Long & Co., new list Jan. 22, '79, dis 35 %
" Peter Wrights..........15½c
Parallel, Parker's..........dis 20 %
" Wilson's..........dis 45 @ 50 %
" Howard's..........dis 25 %
" Merrill's..........dis 20 %
" Sargent's..........dis 66⅔&10 %
" Trenton..........dis 25 %
" Backus and Union..........dis 25 %
" Fisher & Norris..........dis 15&10 %
" Stevens'..........dis 25 %
" Simpson's Adjustable..........dis 25&10 %
"Family," List..........net
Saw Filers, Bonney's..........₩ doz $24.00, dis 20&10 %
" Stearn's..........dis 20&10 %
" Hopkins'..........₩ doz $17.50 dis 10 %
Lowell Hand Vises..........dis 20 %
Richardson's Vise and Anvil..........dis 25 %

Ventilators.
Protective (upper) per foot, $1.00..........} dis 25 %
" (lower) " 1.50..........}

Washer Cutters.
Smith's Patent..........₩ doz $12.00 dis 10 %

Johnson's..........₩ doz $12.00, dis 33⅓ %
Penny's..........₩ doz $14.00 and $16.00, dis 45 %
Appleton's..........₩ doz $8.00, dis 20&10 %

Washers.—See Nuts and Washers.

Weather Strips.
Protective Ventilator Co. s..........dis 25 %

Well Wheels.—Revised list..........dis 60&10 %

Wire.
Brass and Copper....... List of July 1, 1878 dis 15&10 %
Bright and Annealed.......Nos. 0 @ 18, dis 57½ @ 60 %
" " ....Nos. 19 @ 26, dis 62½ @ 65 %
" " ....Nos. 27 @ 36, dis 65 @ 67½ %
Coppered..........Nos. 0 @ 18, dis 52½ @ 55 %
Galvanized, Nos. 0 to 6..........₩ ℔ 10c, dis 37½ @ 40 %
" Nos. 7 to 18......market list, dis 37½ @ 40 %
Tinned, Nos. 0 to 18..........dis 42½ @ 47½ %
Cast Steel..........dis 25 @ 30 %
Tinned Broom Wire, Nos. 18 to 25..........dis 57½ @ 60 %
Annealed Fence, Nos. 8 and 9..........dis 60 @ 62½ %
" Grape, Nos. 10 to 14..........dis 60 @ 62½ %
Galvanized Telegraph, Nos. 7 to 9..........₩ ℔ 8½c
" " Nos. 10 and 11..........₩ ℔ 9½c
" " No. 12..........₩ ℔ 10c
Fence Staples..........₩ ℔ 6 @ 6½c
" Staples, Galvanized..........9....₩ ℔ 7 @ 7½ c
Stubs Steel Wire..........$7.00 to £ gold
Japanned Barb Fence..........₩ ℔ 13c
Galvanized "..........₩ ℔ 14c
Steel Music Wire, Nos. 12 to 27..........₩ ℔ $1.00, net
Judd's Picture Wire..........dis 80&20&10 %
Clothes Line Wire, Galvanized..........₩ coil 30 @ 40c net
Green Wire Cloth, per sq. foot, 3½c..........dis 10 %

Wrenches.
American Adjustable..........dis 45 %
Baxter's Adjustable "S,"..........dis 20 %
" Diagonal..........dis 20 %
Collins & Co.'s..........dis 45 %
Coes' Genuine..........dis 60&10&10 %
" Pattern (Wrought)..........dis 70 %
" " (Malleable)..........dis 75&10 %
L. Coes' "Mechanics"..........dis 60&10&10 %
Girard..........dis 60&10&5 %
Davis' Patent Duplex..........new list, dis 25 %
Bemis & Call's Patent Combination..........dis 25 %
" " Merrick's Pattern..........dis 40&5 %
" " Briggs' Pattern..........dis 35 %
" " Cylinder or Gas Pipe..........dis 25&30 %
Aiken Pocket (Bright)..........$8.00, dis 55&10 %
The Favorite Pocket (bright)..........per doz $8, dis 60 %
Webster's Pat. Combination..........dis 35 %

Wringers. Per doz.
Universal, Cog Wheels, No. 2½..........$60.00
" " " No. 2..........63.00
" " " No. 1½..........71.00
Crown No. 2..........54.00
" No. 2½..........63.00
" No. 3..........69.00
Eureka, No. 1..........57.00
Novelty, No. 10, with Cog Wheels..........60.00
" No. 2..........63.00
Excelsior, No. A, with Folding Bench..........78.00
" No. E, for Set Tubs..........66.00
Keystone No. 1, Wood Frame, no Gear..........54.00
" No. 2, Iron " "..........54.00
" No. 10, Wood " Common Gear..........60.00
Peerless, No. 0, no Cogs..........51.00
" No. 1..........54.00
" No. 2½, with Cogs..........60.00
" No. 2, "..........63.00
" No. 3, "..........71.00
" No. 4, "..........93.00
Unique, No. 0..........51.00
" No. 1..........54.00

Stamped Tinware.—New List Dec. 1, 1878.
Common Stamped Ware..........dis 25 %
Stamped Deep and Retinned Ware..........dis 25 %

METALS.

IRON.—DUTY: Bars, 1 to 1½c. ₩ ℔; Sheet, Band Hoop and Scroll, 1¼ to 1⅜c. ₩ ℔; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ ℔; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 ℔s. Boiler and Plate, 1½c. ₩ ℔.

Pig Iron—AMERICAN.
Foundry No. 1..........₩ ton $18.00 @ 19.00
" No. 2..........₩ ton 17.00 @ 18.00
Gray Forge..........₩ ton 16.50 @

SCOTCH.
Eglinton..........₩ ton 19.50 @ 20.00
Coltness..........₩ ton 22.00

Rails.
Iron, at mill..........₩ ton $32.00 @ 36.00
Steel, "..........₩ ton 43.00 @ 41.00
Old Rails..........₩ ton 20.00 @ 21.00

Scrap.
Wrought Scrap, from yard..₩ ton, nom. 24.00 @ 25.00

Bar Iron, from Store.
Common Iron:
⅜ to 2 in. round and square.......... } ₩ ℔ 1 75c
1 to 6 in.x⅜ to 1 in.......... }
Refined Iron:
⅜ to 2 in. round and square.......... } ₩ ℔ 2.0c
1 to 6 in.x⅜ to 1 in.......... }
1 to 6 in.x⅛ and 5-16..........₩ ℔ 2.2c
Rods—⅝ and 11-16 round and square..........₩ ℔ 2.1c
Bands—1 to 6x3-16 to No. 12..........₩ ℔ 2.4c
Swedish Iron:
Ordinary sizes..........5c

Sheet Iron.

	Common American	R. G. American.
Nos. 10 to 20	₩ ℔ 2½c	3⅜
21 to 24	₩ ℔ 3c	3¾
25 to 26	₩ ℔ 3¼c	4
27	₩ ℔ 3½c	4¼
28	₩ ℔ 3⅝c	4½c

Galvanized, 14 to 20, B. B. ₩ ℔ 6½c; 2d qual. ₩ ℔ 5½c
" 21 to 24, " ₩ ℔ 7½c; " ₩ ℔ 6 c
" 25 to 26, " ₩ ℔ 7¾c; " ₩ ℔ 6½c
" 27 " ₩ ℔ 8½c; " ₩ ℔ 7 c
" 28 " ₩ ℔ 9 c; " ₩ ℔ 7½c
Patent Planished..........₩ ℔ A. 10½c; B, 9½c
Russia..........₩ ℔ Nos. 8 to 14, 13c
American Cold Rolled..........₩ ℔ 4½c

COPPER.—DUTY: Pig, Bar and Ingot, 5c; Old Copper 4c ℔; ₩ Manufactured (including all article of which Copper is a component of chief value), 45 % ad valorem.
American Ingot..........₩ ℔ See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers' Copper, ordinary sizes, over 16 oz., ₩ sq. ft..........₩ ℔ 26c
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., ₩ sq. ft..........₩ ℔ 27c
Braziers Copper 10 oz and 12 oz., ₩ sq. ft..........₩ ℔ 29c
" Lighter than 10 oz. ₩ sq. ft..₩ ℔ 31c
Circles less than 84 in. in diameter..........₩ ℔ 28c
Circles 84 in. diameter and over..........₩ ℔ 31c
Segment and Pattern Sheets..........₩ ℔ 27c
Locomotive Fire Box Sheets..........₩ ℔ 20c
Sheathing Copper, over 12 oz. ₩ sq. ft..........₩ ℔ 25c
Bolt Copper..........₩ ℔ 26c
Copper Bottoms..........₩ ℔ 26c
No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.
14x48, by the case..........₩ sheet 6c
14x48, less than case..........₩ sheet 8c
For tinning both sides, double the above amount

O'NEILL'S PATENT PLANISHED COPPER.—Net.
14X48.
14 and 16 oz. and heavier..₩ ℔ 31c By the case. ₩ ℔ 30c
12 oz. and lighter..........₩ ℔ 34c " " . ₩ ℔ 33c
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier. ₩ ℔ 33c By the case. ₩ ℔ 32c
(And all sizes not over 20 in. wide.)
30x60.
14 and 16 oz. and heavier..........₩ ℔ 35c
12 oz..........₩ ℔ 30c

Brass.
Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.
BRASS MANUFACTURERS' PRICE LIST.—dis nominal. July 1, 1878.
Cash prices for Roll and Sheet Brass. For less quantity than 100 ℔s. add 3c ₩ ℔.

HIGH BRASS.
All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in..........25c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive..........30c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive..........33c
½c. ₩ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at...48c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 32c
Printers' Rules..........40c
Sheets wider than 30 in. and under 40 in..........42c
" 40 in. and over..........45c
Circular Sheets, in diam. from 4 in. to 14, inclusive. 35c
" " over 14 " 20, " ..40c
" " " 20 " 30, " ..44c
" " " 30 " 40, " ..50c
" " " 40 in..........54c

LOW BRASS.
4c ₩ ℔ more than High Brass.
Gilding Metal, 8c ₩ ℔ more than High Brass.
Platers' or Gold Metal { In Bars..........49c
{ Sawed..........46c
{ Planed or Polished..........49c

FOR SLITTING.
Metal in width 2 in. to ½ in. to No. 28, inclusive, 1c. ₩ ℔ advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width 1 in. to ½ thinner than No. 28, 3c ₩ ℔ advanc
Metal, in width ½ in. to ¼, inclusive, not thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width ½ in. to ¼ thinner than No. 28, 5c. ₩ ℔ advance.
Metal, ¼ in. in width and less, 10c. ₩ ℔ advance.
Any of the above widths cut to particular lengths, add 7c. ₩ ℔.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.42	$0.70
6 " " "	56	76
10 " " "	64	.88
15 " " "	.74	1.03
18 " " "	.80	1.12

German Silver Sheets over 12in. wide and weighing more than 10 ℔s., $2.00 ₩ ℔.
Advance 2c. for each additional inch in width above 12 in., and 2c. ₩ ℔ on each No. thinner than Nos. 26 to 36, inclusive
All German Silver thinner than No. 36 is Platers, at 50c ₩ ℔ additional.
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	Gild'g and High Brass.	Low Brass.	Copper.
No. 0 to 20	$0.26	0.32	$0.38

No. 21	.31	$ .35	.41
No. 22	.32	.36	.42
No. 23	.33	.37	.43
No. 24	.35	.39	.45
No. 25	.38	.42	.48
No. 26	.40	.44	.50
No. 27	.43	.47	.53
No. 28	.47	.51	.58
No. 29	.50	.54	.61
No. 30	.53	.57	.67
No. 31	.57	.61	.73
No. 32	.61	.65	.79
No. 33	.65	69	.88
No. 34	.69	.73	.98

Spring Wire 2c ₩ ℔ advance.
Flat, Square and Half Round Wire 5c ₩ ℔ advance on Round Wire.
Fancy Wire not less than 10c ₩ ℔ advance of Round Wire.
Brass Rods, No. 8 and larger not less than 2 feet lengths, 33c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 38c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per ℔ extra for spooling on 1 ℔ spools.

MISCELLANEOUS.
Common Plain Brass Pail Ears..........$0.36
Brass Door Rail..........38

SCRAP.—net.
High Brass Scrap..........11c
Low "..........13c
Gilding..........15c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 10 % ₩ ℔
Plain to No. 20 inclusive, above ¼ in. to 3 in..........$0.38
" above 3 in..........48
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain, ¼ inch..........65
" 3-16 "..........1.05
" ⅛ "..........1.55
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20..........45c
English, Scotch and Extra Patterns Fancy Tubing to No. 20..........50
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—net.
Plain..........22
Fancy..........28
Scotch and Extra Patterns..........31

GERMAN SILVER TUBING.—dis 10 %
4 Per cent..........75
6 "..........85
9 "..........1.00
12 "..........1.15
15 "..........1.20
16 "..........1.35
18 "..........1.45
20 "..........1.55

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents ₩ ℔., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ₩ ℔; over 11, 3½ cents ₩ ℔, and 10 % ad val. Railway Bars, 1¼ cents ₩ ℔. Railway Bars, in part Steel, 1 cent ₩ ℔. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool..........15c
Spring..........7c
Homogeneous..........12½c
Boiler Plate..........8c
Tire..........5½c
Machinery (round and square)..........9c
File..........9c
Sheet..........11 @ 16c
Saw Plate, mill and mulay..........14 @ 16½c
" gang and X cut..........13 @ 14c
" circular as to size..........18 @ 20c

Chrome Steel.
Tool..........₩ ℔ 14 @ 15c
Tool, extra fine..........₩ ℔ 40 @ 75c
Spring..........₩ ℔ 8 @ 9c
Machinery..........₩ ℔ 8 @ 10c
Gun or Homogeneous..........₩ ℔ 12 @ 16c

English Steel.—
" Best Cast..........₩ ℔ 15½c
" Extra Cast..........₩ ℔ 16½c
" Round Machinery, Cast..........₩ ℔ 10c
" Swaged, Cast..........₩ ℔ 18c
" Best Double Shear..........₩ ℔ 13½c
" Blister, 1st quality..........₩ ℔ 13c
German Steel, Best..........₩ ℔ 11c
" 2d quality..........₩ ℔ 10c
" 3dq uality..........₩ ℔ 9c
Sheet Cast Steel, 1st quality..........₩ ℔ 15½c
" 2dquality..........₩ ℔ 14½c
" 3dquality..........₩ ℔ 12½c

ANTIMONY..........13 to 13½

LEAD.—DUTY: Pig $2 ₩ 100 ℔s; old Lead, 1½c ℔ ₩ Pipe and Sheet, 2½c ₩ ℔.
American..........4¼c @ 4½c
Bar..........4½c. dis 10 %
Pipe..........5c. dis 10 %
Tin Lined Pipe..........12c. dis 10 %
Sheet..........6c. dis 10 %
Shot..........Drop 6½c, Buck, 7½, dis 10 %
Chilled Shot..........8c, dis 10 %

BABBITT METAL.
N. P. U..........₩ ℔ 6 @ 7c
A. 20c; B, 16c; C, 12c; D 10c ₩ ℔.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ₩ ℔; Electro-galvanized Plates, 2c ₩ ℔; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent
Banca..........₩ ℔ 19c
Straits..........₩ ℔ 16@16½
English..........₩ ℔ 16

TIN PLATES.
I C 10x14 } 14x20 } Prime Charcoal..........$6.50 @ 6.75
I C 12x12 "..........6.75 @ 7.00
I X 10x14 } 14x20 } Prime Charcoal..........8.50 @ 8.75
I X 12x12 "..........8.75 @ 9.00
D C 12½x17 "..........6.00 @ 6.25
D X 12½x17 "..........8.00 @ 8.25
For each additional X add..........2.00

COKE TIN PLATE.

	Best.	2d quality.	Ordinary.
I C 10x14 } I C 14x20 }	$6.00	5.75	5.25 @ 5.50
I C 12x12	6.25	6.00	5.50 @ 5.75

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$6.00	5.50 @ 5.75	5.00 @ 5.25
I X 14x20	@ 8.00	....	....
I C 20x28	12.25 @ 12.50	11.75 @ 12.00	10.50 @ 11.50
I X 20x28	@ 16.00	....	....
I C 20x200	@ 18.75	..	....
I C 14x20 M. F. Brand			$7.75

SOLDER..........No. 1, 9½c @ 10½c No. 2, 9c
SPELTER—DUTY: in Pigs, Bars and Plates, $1 ₩ 100 ℔s.
American, cash..........5¼ @ 5½c
Bergen Port from Lehigh Ore..........9c
Lehigh, on spot..........9c
ZINC.—DUTY: Pig or Block, 1.50 ₩ 100 ℔s. Sheet, 2½c ₩ ℔.
Sheet, Cask..........6¼@6½c
" Open..........7c

Paper Stock, Old Metals, &c

(Dealer's Selling Price.)
Canvas linen..........4 @
White cotton, new..........5½ @
" " No 2..........@ 2
White linen rags, No. 1..........4 @
" " No. 2..........2½ @ 2¾
Seconds..........1¾ @ 2
Mixed woolens..........2½ @ 3¼
Soft woolens..........8½ @
Gunny bagging..........3⅜ @
Jute Butts..........3 @ 3½
Kentucky bagging..........4½ @
Waste paper and scraps..........@ 1
Rope cuttings..........1½ @ 3
Kentucky bale rope..........4 @ 4½
Grass rope..........@ 2¾
Tarred shaking..........1½ @
White collar cuttings, all paper..........7 @
" " muslin lined..........5 @
" " Envelope..........7 @
Hard White Shavings, No. 1..........3½ @
Soft " No. 1..........3 @
White Shavings, No. 2..........2¾ @
Mixed Shavings, part white..........2¼ @
Imperfections, No. 2, best folded sheets..........3¼ @
" No. 1, Heavy Stock..........3⅜ @
Book Stock..........3 @
" " Heavy..........3 @
" " Light..........1½ @
Newspapers..........1¾ @ 2
Prints..........1¼ @
Pure Manilas..........2¾ @ 1½
Bogus Manilas and Hardwares..........¾ @ 1
Commons..........50 @
Binders' Board Cuttings..........1 @
Straw Board Cuttings..........¾ @
Woolen Tailor Clips..........1½ @ 1¾
Satinet "..........2 @ 2¾

Old Metal.
Copper, heavy..........14½ @
Copper Bottoms..........11
Yellow Metal..........10 @
Brass, light..........8½ @
" heavy..........10½ @
Heavy Composition..........13 @
Old Lead, solid..........2¾ @
Tea Lead..........2½ @
Zinc..........3⅛ @ 3½
Pewter, No 1..........11 @
" No. 2..........9 @
Wrought Iron..........per ton $18 50
Machinery Iron..........per ton 13 50
Light Iron..........per ton 10.50
Stove Plate..........per ton 10.50
Grate Bars..........per ton 4.50

Paints, Oils, &c.

Paints.
Black Lamp, Coach Painters..........₩ ℔ 20c
" Ordinary..........6c
" Ivory Drop, fair..........12 @ 15c
" " best..........29c
Black Paint, in oil..........kegs, 8c asst'd cans, 11c
Blue, Prussian, fair to best..........[illegible]
" " in oil..........[illegible]
Blue Chinese dry..........[illegible]
" Ultramarine..........18 @ 20c
Brown, Spanish..........1½c
" Van Dyke..........10@12c
Carmine, 40..........combination price
Green, Chrome..........15 @ 23c
" " in oil..........14 @ 18 @ 25c
" Paris..........good 25c; best, 30c
" " in oil.......... " 30c; " 45c
Iron Paint, Bright Red..........₩ ℔ 2¼c
" Red..........₩ ℔ 2c
" Brown..........₩ ℔ 1½c
" Purple..........₩ ℔ 3c
" Ground in Oil, Bright Red..........₩ ℔ 5½c
" " " Red..........₩ ℔ 5c
" " " Brown..........₩ ℔ 4½c
" " " Purple..........₩ ℔ 6c
Mineral Paints..........1¼ @ 4c
Orange Mineral..........11c
Red Lead, American..........6½c
" English..........9½c gold
" Venetian (N. C.) dry..........$1.65 @ $1.70
" " in oil..........asst'd cans, 11c; kegs, 8c
" Indian dry..........9 @ 12c
Rose Pink..........10 @ 13c
Sienna, American, Raw..........4c
" Burnt..........4½c
" " in oil..........10 @ 16 @ 20c
" Raw "..........11 @ 15 @ 25c
Umber, Burnt..........4 @ 8c
" " in oil..........9 @ 12 @ 16c
" Raw..........3½ @ 7½c
" " in oil..........10 @ 16 @ 18c
Vermillion, Chinese..........90c, gold
" English..........60c, gold
" Trieste..........1.10, gold
" American, Common..........15c
White Lead, American, pure dry..........7 to 8c
" " " in oil..........7½c to 8c
White, Paris, English, prime..........in bbls. 2 @ 2½c
Yellow Ochre, French..........$1.75
" " in oil...asst'd cans, 11c; kegs, 8c
" " Vermont..........in casks 1½c
Yellow Chrome..........17 @ 27c
" " in oil..........14 @ 18 @ 24c
Zinc White, American No. 1, dry..........7c
" No. 1, in oil..........9c
" French (Paris)..........8 @ 10c
" " in oil..........@ 10c

Oils.
Linseed, Raw, in casks and bbls..........₩ gal. 60c & 61c
" Boiled. " "..........64c & 65c
Bleached Whale..........₩ gal. 53c
" Sperm..........₩ gal. 96c
" Elephant..........52c
Signal..........53c
Prime Lard..........54c
No. 1..........48c
West Virginia..........18c @ 25c
Drilling..........40c
Empire Cylinder..........65c
Miners' Oil..........33 to 40c
Fish Oil, pressed..........30c
Neatsfoot..........70c
Tallow..........60c
Machinery..........40c
Engine..........50c

Sundries.
Asph atum..........60
Benzine..........₩ gal. 50
Chalk..........3½
" Block..........3¾
Dryer, Patent, Am'n..........ass't cans, 10½c; keg, 90
Frostings..........50
Glue, White..........33 @ 40
" Sheet..........20
Glaziers' Points, Zinc..........30
Gum, Copal..........350
" Damar..........250
" Shellac, English..........300
" " dark..........250
Litharge, English..........9c gold
Mineral Wool..........₩ ℔ 1¼ @ 1½
Pumic Stone, selected Lumps..........4 @ 6
" powdered..........2½
Putty, in bladders..........2½
" in bulk..........20
Rotten Stone, soit, English..........8
Spirits Turpentine..........32
Whiting Spanish..........¾

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

Single Thick.—Discount 60&15&20 %

SIZES.	1st.	2d.	3d.	4th
6 x 8 to 10 x 15	$ 8.00	$ 6.75	$ 6.25	$ 5.75
11 x 14 to 16 x 24	8.75	8.00	7.10	7.00
18 x 22 to 20 x 30	11.25	10.50	9.75	8.75
15 x 36 to 24 x 30	12.75	11.50	10.00	
26 x 28 to 24 x 36	13.50	12.25	11.25	
26 x 36 to 26 x 44	14.75	13.75	11.70	
26 x 46 to 30 x 50	16.25	15.00	13.00	
30 x 52 to 30 x 54	17.25	16.00	13.50	
30 x 56 to 34 x 56	18.75	16.75	15.00	
34 x 58 to 34 x 60	19.50	18.00	16.00	
36 x 60 to 40 x 60	21.00	19.50	18.00	

Double Thick.—Discount 70 to 5 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12.00	$11.00	$10.00	$ 9.25
11 x 14 to 16 x 24	14.75	13.75	12.75	11.75
18 x 22 to 20 x 30	19.00	17.75	16.00	
15 x 36 to 24 x 30	21.50	19.25	16.50	
26 x 28 to 24 x 36	23.00	20.75	18.25	
26 x 36 to 26 x 44	25.00	23.00	19.25	
26 x 46 to 30 x 50	27.00	25.00	21.25	
30 x 52 to 30 x 54	28.50	26.00	22.25	
30 x 56 to 34 x 56	30.00	27.75	24.75	
34 x 58 to 34 x 60	31.75	30.00	27.00	
36 x 60 to 40 x 60	35.50	32.50	30.25	

Sizes above 40 x 60—$10.00 per box extra for every five inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket

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is the best Husker in the market. Farmers say it is the best. Use no other.

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Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers. 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.

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For Railroad Switches, Freight Cars, and the Hardware Trade. All sizes, with Brass and Steel Keys, with and without chains.

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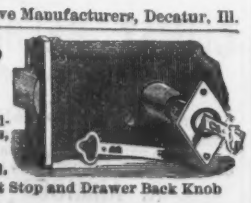

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Terms, 60 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wright's, ₩ ℔, gold 10½c
over 200 lbs ..... 11c net
Wilkinson's, ₩ ℔, gold ..... 11c. net
Eagle (American) ..... 9 cents per lb—dis 20%

Apple Parers.—
Reading No. 72 ..... per doz $ 5 00 net
" " 74 ..... " 6 00 net
" " 75 ..... " 7 00 net
" " 78 ..... " 7 50 net
Peach Parers ..... " 10 00 net
Lit le Favorite, corer and slicer ..... " 7 50 net
Lots of 10 to 25 dozen special price.

Axes.—
Mann's Red Warrior ..... Per doz. $8 00 @ 8 50 net
Red Indian ..... " 8 00 @ 8 50 net
Red Chieftain, bevelled ..... " 8 50 @ 9 00 net
Crown Prince ..... " 8 50 @ 9 50 net

Augers and Auger Bits.—
Bates' Nut Augers ..... dis 50 @ 55 %
Cook's Augers ..... dis 50 @ 55 %
Watrous' Ship Augers ..... dis 15 %
Benjamin Pierce Auger Bitts ..... dis 40 %
Griswold Auger Bits ..... dis 50 @ 55 %
Cook's " " ..... dis 50 @ 50&5 %
Jennings' " " ..... dis 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz ..... dis 25&10 %
Stearns' Pat. Hol. Augers " $48 " ..... dis 25&10 %

Balances.—
Light and "Common" ..... dis 25&10 %

Bells.—
Bevin Bros. Mfg Co. Light Hand Bells ..... dis 70 @ 75 %
Sewins Pattern Hand Bells ..... dis 50 @ 5%&10 %
Connell's Door Bells ..... dis 50 @ 50&10 %
Gt. Western & Kentucky Cow, new list ..... dis 50&10 %

Belt and Rivet Clippers.
Chambers' No 1, for ⅜ bolt, each ..... $ 7 50
" " 2, " ½ " ..... 9 00 } dis. 25 %
" " 3, " ⅝ " ..... 12 00 }

Boring Machines.—
Upright, with Augers ..... List $9 00 dis 40&10 %
" without Augers ..... " 5 50 dis 40&10 %
Angular, with Augers ..... " 11 00 dis 40&10 %
" without Augers ..... " 7 00 dis 40&10 %

Bolts.—Eastern Carriage Bolts ..... dis 75&3 %—cash
Philadelphia " " ..... dis 70 %
Stanley, Wrought Shutter ..... dis 50 %

Braces.—Barber's ..... dis 40&5 %
Peckus ..... dis 50 @ 50&10 %
Spofford ..... dis 20&5 %
American Ball ..... dis 35 %

Butts.—Cast Fast Joint, Narrow ..... dis 60&10 %
" " Broad ..... dis 65&10 %
Cast Loose Joint, Narrow ..... dis 70&10 %
" " Broad ..... 70&10 %
" Acorn, Loose Pin ..... dis 70&10 %
" Acorn " Jap'd ..... dis 75&10 %
Mayer's Loose Joint ..... dis 70&10 %
Wrought Loose Pin ..... dis 50 %
" Table Hinges and Back Flaps ..... dis 45 %
" Narrow, Fast ..... dis 50 %
" Loose Joint ..... dis 50 %

Blind Butts.
Parker ..... dis 75&10 %
Clark ..... dis 75&10 %
Shepard ..... dis 70&10 %
Lull & Porter ..... dis 66⅔&10 %
Huffer's ..... dis 53⅓ @ 53⅓&10 %

Chains.—German Halter and Coil ..... dis 40 @ 40&10 %
Galvanized Pump ..... ₩ ℔ 10c net
Best Proof Coil Chain—(English).

₩ ℔	11/4	5/16	3/8	7/16	1/2	9/16	5/8 in.
	5/16	3/8	7/16	1/2	9/16	5/8	7c gold

Chisels.—Socket Framing ..... dis 65, 5&10 %
Socket Firmer ..... dis 65, 5&10 %
Butcher's ..... $5 00 to £ gold

Casters.—Bed ..... dis 50&10 %
Plate ..... dis 50&10 %

Coffee Mills.—Box and Side ..... dis 25 %
Enterprise ..... dis 20 %

Cutlery.—Wallen Pocket ..... dis 35&5 % cash
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.—
Hart Mfg Co.'s ..... dis 65, 5&10 %
Adjustable Handle ..... dis 20 %

Fry Pans.
Tinned ..... dis 50&10 @ 60 %

₩ doz.	$3 50	4 00	4 50	5 00	5 50	6 50	7 50	9 00	10 00
No.	0	1	2	3	4	5	6	7	8

Burnished ..... dis 60&5 %

₩ doz.	$3 00	3 75	4 25	4 75	5 25	6 00	7 00	8 00	9 00
No.	0	1	2	3	4	5	6	7	8

Files.
Nicholson ..... dis 35 %
Disston ..... dis 35 %
Butcher ..... $1 50 £ gold
Spencer ..... $4 50 @ 4 75 £ gold

Fluting Machines.
Eagle—8¼ in. roll ..... Each $1 62½ net
" —6¼ in. roll ..... " 2 12½ net
Crown—7¼ in. roll ..... " 2 62½ net
" —6 in. roll ..... " 3 00 net
" —8 in. roll ..... " 5 00 net
Geneva Fluter ..... dis 20 %
Favorite com. Fluter & Sad-iron ..... ₩ doz $20 dis 25&10 %

Hammers.
Yerkes & Plumb's ..... dis 20 %

Hatchets.
Yerkes & Plumb ..... dis 33⅓ %
Hunt ..... dis 25 %

Hinges.
Strap and T ..... dis 60&10 %

Horse Nails.

	Nos.	5	6	7	8	9	10
Ausable		30	27	25	24	23	22
" Polished & Fl'd and Blued and Pointed		31	28	26	25	24	23
Globe	Net l'st	26	23	21	20	19	18
Clinton		22	20	19	18	17	
" Polished and Pointed		23	21	20	19	18	
Southern, all sizes							

Discount on Ausable and Clinton, 20 %; Globe, net.

Locks and Knobs.
Branford ..... new list, dis 60&10&2 % cash
Gaylord Cabinet ..... dis 25&2 % cash
United States Lock Co ..... dis 35 %
American Padlocks ..... dis 25%, 5&2 % cash
Scandinavian Pad Locks ..... dis 50&10 %

₩ doz.	3 50	5 00	6 50	7 50	8 50	10 00	12 00 }
No.	57	58	59	60	61	62	63 } dis 50 %
₩ doz.			$15 00		26 00		34 00 }
No.			64		65		66 } dis 50 %

Lanterns.—
Square Candle and Oil ..... ₩ doz. $2 75 @ 3 00
Tubular ..... No. 0, $10 50; No. 1, 12 00 ₩ doz. net
Guards 50 cents extra per doz. net.

Mattocks.—
Long and Short Cutter ..... ₩ doz. $9 00 @ 9 50 net
Pennsylvania Pattern ..... " 9 50 @ 10 00 net

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets ..... dis 20 %
Stebbins' Gates ..... dis 62½&10 %
Lincoln's " ..... dis 62½&10 %
Landers, Frary & Clark's Petroleum ..... dis 25&10 %
Brass Liquor Cocks ..... dis 5 %
Cork Lined " ..... dis 65 & 65&10 %

Meat Cutters.—Dixon's ..... dis 25 @ 30 %
Woodruff ..... dis 25 @ 30 %
Stowe ..... dis 25 @ 30 %
Hale's ..... new list, dis 50&2 %
American ..... dis 25 %
Stuffers ..... dis 25 @ 30 %
Enterprise Stuffers ..... dis 20 %

Planes.—Ohio Tool Co ..... dis 35 & 10 %
Bailey ..... dis 25&10 %
Scioto ..... dis 50
Auburn ..... dis 35 & 10 %
New York Tool Co ..... dis 50 %

Plane Irons.—Ohio Tool Co ..... dis 20 & 10 %
Butcher's ..... gold £, $5 50

Plumbs and Levels.
Stanley's Adjustable ..... dis 15&10 %
" non-Adjustable ..... dis 15&10 %

Picks.—Philadelphia ..... dis 10 %
Hunt's ..... dis 25 %

Pumps.—Bickford ..... $7 40, dis 20&10 %

Rules.—Stanley Boxwood ..... dis 75&10 %
Stanley Ivory ..... dis 60&10 %

Steelyards.—Hart's Pattern ..... dis 60&10 %

₩ doz.	$14 50	15 75	21 00	26 50	31 50	35 50
Lbs.	50	100	150	200	250	300

American Pattern ..... dis 25 @ 25&10 %

₩ doz.	$7 00	8 67	10 67	12 67	14 67	16 67
Lbs.	50	100	150	200	250	300

English Pattern ..... dis 25 @ 25 %

₩ doz.	$7 00	8 67	10 67	12 67	14 67	16 67
Lbs.	50	100	150	200	250	300

Squares.—
Steel and Iron ..... dis 50 %; full case, dis 50&10 %
Try Squares, Stanley ..... dis 50&10 %
Disston's Try Squares ..... dis 50&10 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ..... ₩ doz. $9 00 net
Clipper No. 10, Bronzed Blade Boxed and Sharpened ..... ₩ doz. $7 50 net
Clipper No. 5, Painted Red, Boxed and Sharpened ..... ₩ doz $7 25 net

Saws.—Disston's Hand, Panel and Rip ..... dis 20 %
Disston's Circular ..... dis 30 %
" Cross-Cut No. 2, Plain Tooth ..... ₩ ft., 45c. net
" " Patent Tooth ..... ₩ ft., 45c. net
" " Champion Tooth ..... ₩ ft., 37c. net

Shovels and Spades.
Rowland ..... dis 50&5 %
Oliver Ames & Sons, new list ..... dis 20 %

Sad Irons.—4 to 10 lbs ..... ₩ ℔, 2¼ @ 2½c

Mrs. Potts' Patent ..... dis 33⅓ %

Stone.—Arkansas Oil Stone ..... ₩ ℔ $2 00 net
Washita Extra ..... " 35 }
" No. 1 ..... " 20 }
" " 2 ..... " 16⅔ } dis
" Slips ..... " 45 } 10 %
" Axe ..... " 20 }
Turkey Oil Stone No. 1 ..... " 16½c net
" " " 2 ..... " 10c net
" Axe Stone ..... " 25c net
Hindostan Oil Stone No. 1 ..... ₩ ℔ 4 @ 4½c net
" Axe Stone ..... " 5 @ 6½c net

Screws.
Flat Head Iron ..... dis 60 %
" " Brass ..... dis 40 %
Round Head Brass ..... dis 45 %
" " Iron ..... dis 30 %

Spoons.—
Plated ..... dis 40 @ 40&5 %
German Silver ..... dis 30&10 %
Britannia, Boardman's ..... dis 65 %
" Parker's ..... dis 65 %
Tinned ..... dis 65 %
" by case ..... dis 15 @ 20 %

Springs.—Torrey ..... ₩ doz $2 00 @ 2 10 net
Philadelphia ..... 5 in., $3 00; 6 in., $7 00 ₩ doz. dis 25 %
Castfield ..... No. 1, $3 50; 2, $4 00; 3, $6 00 ₩ doz. net
Gem Coil No. 1, Large Jap'd ..... ₩ doz $3 50 }
" " No. 2, Medium Jap'd ..... " 2 50 } d's
" " No. 3, Small ..... " 2 00 }

Stocks and Dies. ..... dis 10&5 %

Stove Polish.—Gem ..... ₩ gross, $4 50, dis 5 %
Dixon ..... " $6 00, dis 5 %
Onyx ..... " $4 00 @ 4 25 net

Tacks, Brads, &c.—New List ..... dis 55&10 %
Shoe Nails—
4-8 and larger, 9c; 3¼-8, 9½c ₩ ℔ New list, net
Double Pointed Tacks ..... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ..... dis 33⅓ %
Im. Oneida—Newhouse list (1st qual.) ..... dis 60&10 %

Vises.—Solid Box, Trenton new list ..... dis 55 %

Wrenches.—
Girard (Coe's Pattern) ..... dis 50 @ 10&10 %
Agricultural—
₩ doz 10 in., $3 60; 12 in., $5 40 net; case dis 5 %
Coes' Genuine ..... dis 6%&10 %
" Pat. Wrot Bar ..... dis 60&10 %
" " Mall ..... dis 75&10 %
Taft's " Wrot " ..... dis 75 @ 75&10 %
Phila. Tool Co., Duplex ..... dis 35 %

Wire.—
Bright or Ann'd, No. 19 to 36 ..... dis 60 %
" No. 27 to 36 ..... dis 67½ %
" No. 0 to 18 ..... dis 62½ %
Coppered 0 to 18 ..... dis 55%
Tinned Broom Wire ..... dis 55%
Galvanized, No. 7 to 18 ..... Market list, dis 30 %

Wringers.—Novelty No. 10 ..... ₩ doz. $60 00 net
Nove ty No. 3 ..... " 65 00 net
Universal, No. 2¼ ..... " 60 00 net
" No 2 ..... " 65 00 net

PITTSBURGH.

Merchant Iron.

Wood's Patent Planished Sheet.

1st quality (A) ..... 10½c | 2d quality (B) 9½c
Plate Iron—3-16 to ½ in. thick 2.80

Galvanized Iron-Juniata.

Nos. 14 to 20	13c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Common and Imperfect Juniata, to 50 % off. Discount, 35 to 40 %.

Roofing Iron, Corrugated or Crimped.

Galvanized Common.		Black.	
No. 20	6½c net cash	No. 20	3.40
No. 21 & 22	.6¾ & 7¼ "	Nos. 21 & 22	3.5 @ 3.80

Bridge Iron.
Carnegie Bros. & Co.'s list.

Beams and Channels.

Solid Wrought Iron Beams, 3 to 10½ in. x 30 ft.. ₩ ℔ 2¾c
" " " " 12 in. by 25 ft. " 2¾c
" " " " 15 in. by 25 ft. " 2¾c
Deck Beams, 7 to 9 in. by 30 ft. " 2¾c
Channel Bars, 1¼ to 10 in. by 30 ft. " 2¾c
" " 12 in by 30 ft. " 2¾c

Tee Iron.

1 in. x 1 in. to 5 in. x 3 in. ₩ ℔ 2.8c

Angle Iron.

Equal Sided, 1x1 to 1¾x1¾ in. ₩ ℔ 2.6c
" " 2x2 to 4x4 " 2.5c
Unequal Sided, 2x1¾ to 5x4 " 2.5c
Square Root Angles, 2x2 to 3½x3½ " 2.5c
Star Iron, 1¼x1¼ to 4x4 " 2.6c
Sash Iron, 1¼x1¼x3-16 " 3.25c
Miscellaneous Shapes, various shapes ₩ ℔, 2.6 to 3.4c
Special prices for large lots.

Nails.

Fence and Brads.

10d to 60d	$2.15	4d and 5d	$2.90
8d and 9d	2.40	3d	3.05
6d and 7d	2.65	2d	4.90

Barrel.

¾ in.	6.15	1¼ in.	3.90
⅞ "	5.15	1⅜ "	3.65
1 "	4.65	1½ "	3.15
		1¾ "	2.90

Lining.

⅞ in.	6.65	¾ in.	8.15

Tobacco ..... 50 cents per keg advance on common
Clinch—All sizes 3.90

Slating.

5d	3.15	3d	3.90
4d	3.15	2d	5.15

Finishing.

1 in.	7.15	1¼ to 1¾ in.	4.15
1¼ "	6.15	2 in.	3.90
1⅜ "	4.40	3 " and over	3.65
			3.40

Casing and Box.

10d to 30d	2.90	6d	3.40
8d	3.15	4d	3.65
		3d	4.65

Fine Blued.

4d	3.90	3d	5.15
		2d	5.90

Cut Spikes—All sizes 2.40
Boat Spikes—All sizes 2.90
Each half keg 10 cents extra.

TERMS.—Note or acceptance at 60 days; or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice. An abatement of 10 cents per keg allowed upon orders of 200 kegs or over.

Steel.

Square, Flat and Octagon Tool Steel.

¼ to 2 in.	12c	7-32 and 4½ 5 in.	15c
5-16 and 2½ to 3 in.	13c	3 16 and 5¾ to 6 in.	19c
¼ and 3¼ to 4 in.	14c	5-32 in.	23c

Single and Double Shear Nailers—Same as Tool.
Knife, Tup, Die, Mill Pick, Drill—Ordinary sizes 12c

Machinery Steel—Round.

¼ to 2 in.	7c	7-32 and 4½ 5 in.	10c
5-16 and 2½ to 3 in.	8c	3-16 and 5¾ to 6 in.	13c
¼ and 3¼ to 4 in.	9c	5-32 in.	18c

Cast Spring Steel.

1 to 4x1¼ to ½ in.	6c	1¼ to 3x½-32 to 1-16 in.	7c
		¾ to 1¾x½-32 to 3-16 in.	8c

Agricultural Steels.

Solid Cast Steel Plow, 4 to 16 by 3-16 to ¾ in. 6c
"Iron Center Plow," 4 to 16x3-16 to ¾ in. 6½c
"Iron Back Plow," 4 to 16x3-16 to ¾ in. 7½c
Soft Steel Center Plow, 4 to 16x3-16 to ¾ in. 9c
Landside and Cultivator, C. S., ⅛ in. thick 8½c
Circular Plow Coulters, 5-32 to ¼ in. thick 10c
Reaper and Scythe 12c
Fork and Hoe 6c
Horse Rake Teeth, tot ength 7c
Finger Bar 7½c
Cutter Bars, C. S. 7½c
" " German Spring Steel 6½c
Cornstalk Cutter beveled to length 7c
Planters' Hoe, C. S. 8c
Hoe, C. S. 6½c

Sheet Steels.

German, 10 to 16 g.	7c	Common C'st, 17 to 20 g.	9c
" 17 to 20 g.	10c	Best Cast, 10 to 16 g.	12c
Common C'st, 10 to 16 g.	8c	" " 17 to 20 g.	13c

Rolls and Castings.
Furnace, Floor and Straightening Plates 1½c
Housings and Castings not otherwise specified 2½c
Guide Plates 2½c
Spindles and coupling boxes 1½c
Sand Rolls and Pinions, large size 2½c
" " small size ..... 3 c
Pipe Mill Castings ..... 4 c
Rolling Mill Castings under 50 lbs ..... 3 c
Spur and Bevel Wheels, large ..... 3 c
" " small ..... 4 c
Pulleys up to 30 inches ..... 3 c
" over 30 inches 3½c
Engine Castings, light 3½c
" " heavy 3¼c

Chilled Rolls.

6 to 7 in. diam.,	7 to 20 in. long		5 c
8 to 15 in.	" 8 to 40 in.	"	4 c
15 to 24 in.	" 15 to 72 in.	"	4 c
24 to 31 in.	" 72 to 108 in.	"	4 c

Heavy Hardware.

Bolts, Screws, Nuts, etc.

Lewis, Oliver & Phillips, discount off Standard List.
Carriage & Tire Bolts, ordinary orders 75, & 3 % off net
Stove Bolts ..... 40&5 % off net
Elevator Bolts ..... 30 % off net
Machine and Square Head Bolts ..... 60&10 % off net
Coach and Lag Screws ..... 60&10 % off net
Bolt Ends ..... 60&10 % off net
Pat. Hot Pressed Sq. and Hex. Nuts ..... 8c ₩ ℔ off net
Washers, all made from new band iron ..... 8c ₩ ℔ off net
Nuts and Washers in 25 ℔ boxes, ½c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₩ ℔ ex. Nuts and Washers in 5 ℔ boxes, 1c ₩ ℔ ex
Strap and T Hinges ..... 60&10 % off net
Harrow Teeth ..... net
Skein Bolts ..... net
Cast Iron Washers ..... 3½c ₩ ℔ net
Fire Shovels and Pokers ..... 40 % off

Wagon Hardware.

Single Trees, Neck Yokes and Double Trees, made from best selected hickory, and ironed complete, in the most approved patterns.
No. 1 Southern Plow Single Tree, Ironed complete, Irons all Wrought ..... each, 25c net
No. 2 Western Plow Single Tree, Ironed complete, Irons all Wrought ..... each, 35c net
No. 3 Wagon Single Tree, Iron complete, Irons all Wrought, except Malleable Ferrule ..... each, 50c net
No. 4 Wagon Single Tree, Ironed complete, Irons all Wrought; Improved End Pieces riveted on; one side acts as a wear iron for wheel to rub against ..... each, 50c net
Neck Yoke, Ironed complete, Irons all Wrought except End Ferrules, with Wt. Iron Rings ..... each, 60c net
Southern Plow Double Tree, Ironed complete, Irons all Wrought ..... each, 50c net
Wagon Box Strap Bolts—
For orders of 100 Set, 45&10 % dis.

10 in. long by 7-16 at Screw End,				₩ set of 8 bolts		45c
12 in.	"	7/16	"	" 8	"	55c
10 in.	"	9-16	"	" 8	"	65c
12 in.	"	9-16	"	" 8	"	70c
14 in.	"	9-16	"	" 8	"	80c
10 in.	"	⅝	"	" 8	"	80c
12 in.	"	⅝	"	" 8	"	80c
14 in.	"	⅝	"	" 8	"	90c
16 in.	"	⅝	"	" 8	"	1.00
18 in.	"	⅝	"	" 8	"	1.10
20 in.	"	⅝	"	" 8	"	1.20

50 ₩ set for each additional inch over 14 inches. All lengths made.

Horse Shoes, Etc.—In 100 keg lots.
Juniata Horse Shoes ..... per keg, $3.25
" Mule " ..... " 4.25
" "Roadster" pattern ..... " 3.50
Steel Toe Calks ..... per 7½c lb.
Thistlewood & Co.'s Self-Sharpening Horse Shoes ..... per keg, $5.25
Thistlewood & Co.'s Self-Sharpening Snow Shoes ..... " 5.50
Toe Calks ..... per lb. 8c

White and Red Lead.
White Lead in Oil, Assorted Kegs (all sizes) 7½c
" " 25 ℔ Tin Pails, 100 ℔ Cases ..... 8 c
" " 12½ ℔ Tin " 8½c
Red Lead ..... in kegs, 6¼c; in barrels, 6 c
Orange Mineral ..... " 8½c; " 8 c
Litharge ..... " 6½c; " 6 c
Dry White Lead, less than 500 lbs., 7½c; over 500 lbs. 6½c
White Lead in Oil in lots of less than 500 lbs., ½c additional.

Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1½ per cent. will be allowed, but not otherwise.

Window Glass.

Per Box of 50 Feet.—Discount 75 @ 7½&10 %.

Single Strength.

Size.	AA.	A.	B.	C.
6 x 8 to 10 x 15	$7.50	$6.75	$6.25	$5.75
11 x 14 to 16 x 24	8.50	7.75	7.25	6.50
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	
26 x 28 to 24 x 36	13.00	11.50	9.75	
26 x 36 to 26 x 44	14.50	13.25	10.75	
26 x 46 to 30 x 50	15.00	14.00	11.25	
30 x 52 to 30 x 54				
30 x 56 to 34 x 56				
34 x 58 to 34 x 60				
36 x 60 to 40 x 60				

Double Strength.

6 x 8 to 10 x 15	12.00	11.00	10.00	25
11 x 14 to 16 x 24	13.75	12.50	11.75	10.50
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 50	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 81 united inches bracket.

CHICAGO.

(The Chicago Stamping Co., 10, 12 & 14 Lake St.)

March 3, 1879.

Tin Plate.—

10x14, IC, Ch'l Best	7 25	14x20, IXX, Ch' Best	11 25
10x14 IX, " "	9 25	14x20, IXXX, " "	13 25
12x12, IC, " "	7 25	DC, 100 Plate " "	7 25
12x12, IX, " "	9 25	DX, " "	9 25
14x20, IC, " "	7 25	DXX, " "	11 25
14x20, IX, " "	9 25	DXXX, " "	13 25
20x28, IC, Charcoal Roofing, Good		IC, Roofing, " "	6 75
20x28, IC, " Best		IX, " "	8 75
20x28, IX, " "			13 50
10x14, IC, Coke Plates			17 50
14x20, IC, "			6 75
10x20, IC, "			6 75

Black Tin—

Large Figs	18c	Bars	20c
Small	19c		

Zinc.—Sheet, 500 to 1000 lb. Casks 6¾c
Loose Sheets 7¼c
Slab Zinc or Spelter ..... 5 c
Copper.—Bottoms 26c
Sheathing 24c
Planished 33c
Boiler lengths 30c
Ingot 16½c
Bolt 24c

Braziers' Sheets.—
30x60, 6 to 7 lbs ..... ₩ ℔ 30c | 30x60, 10 to 12 lbs ..... ₩ ℔ 26c
30x60, 8 to 9 lbs ..... " 28c | 30x60, 15 to 100 lbs. " 24c

Solder.—F. S. & Co.'s make
Best Fine 14c
No. 1 ..... 13c
Roofing 11½c
Braziers or Spelter Solder 25c
Antimony 15c
Babbit Metal—F. S. & Co.'s 13c
No. 2 ..... 10c

Sheet Iron.—

	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata
No. 24	3 c	3 80c	5¾c	7 c
25 & 26	3 20c	4 c	6 c	7¼c
27	3 4 c	4 20c	6¼c	7¼c

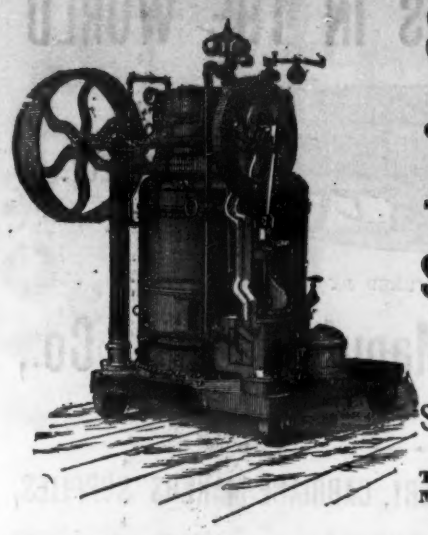
Galvanized Iron.—dis 45 %

No. 16 to 20	12c	No. 27	13c
21 to 24	12c	28	16c
25 & 26	14c		

Russia Iron.—
Perfect ..... 13½c | No. 1 Stained 13½c
In Sheets, 1c. higher.

American Russia.—
A ..... 10½c | B 9½c
In sheets, 1c higher.

Lead.—
Pig ..... 5 c | Lead Pipe, in full coils 5¾
Bar ..... 5¾c | Lead Pipe, when cut.. 6
Wire—bright ..... dis 50 %
Coppered ..... dis 45 %
Sheet Lead 6¼



SHAPLEY ENGINE.

Patented - - - Feb. 10, 1874.
Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

MANUFACTURED BY

SHAPLEY & WELLS,

Binghamton Iron Works,
Binghamton, N. Y.

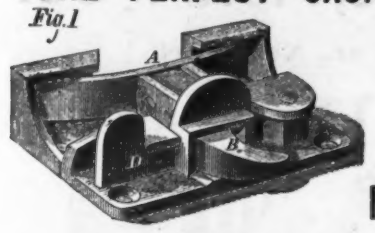
MANUFACTURERS OF

Stationary Engines and Boilers.

Also **Machinery for Mills** of all kinds and **Tanneries.** Also their celebrated **Bark Mills,** acknowledged to be the best.
Send for reduced price list circular.

THE PERFECT SASH TIGHTENER AND LOCK.

Fig. 1



Manufactured entirely from Malleable Iron, Burglar Proof, Anti-Rattling, Draws Sash to Exact Center. No Springs to Get out of Order.

The Best in the Market.

METALLIC CLOTHES PIN.

For either Wire or Rope Line,

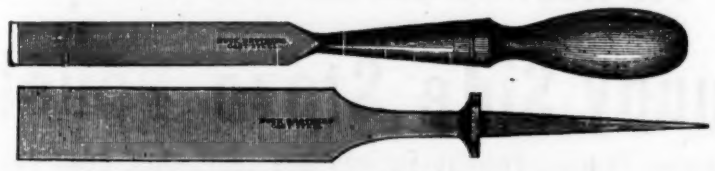
Will securely hold any article, from a silk handkerchief to a carpet. No article can be blown away. Does not soil the clothing. Manufactured by

CLARK & SMITH, Patentees, Chester, Orange Co., N. Y.
SOLE AGENTS,

J. I. BROWER & SON,

286 Greenwich St., New York,

Who keep a general assortment on hand for the country trade. **Jowett's Horse Rasps,** 14, 15 and 16 inch, **Maharay's $10 Tire Shrinker, Heller's Rasps.** Send for Circular.
SPECIAL DISCOUNTS TO JOBBERS.



BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels,

PLANE IRONS.

Gouges of all lengths and circles beveled inside or outside. Nail Sets, Scratch and Belt Awls Cnisel Handles of all kinds. Carving Tools. Also small Boxes of tools of best quality.

SIMPSON & GAULT,

(Peerless Wringer Co.)

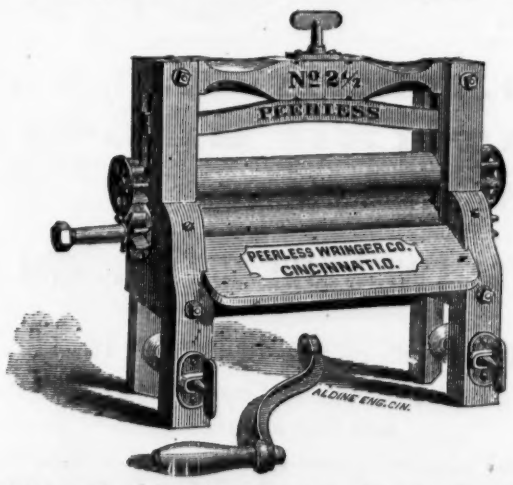
New York Office:
106 Chambers Street.

Office and Factory:
Cincinnati, O.

PEERLESS CLOTHES WRINGERS,

Sold by the Jobbing Trade everywhere.

No Better in the World.



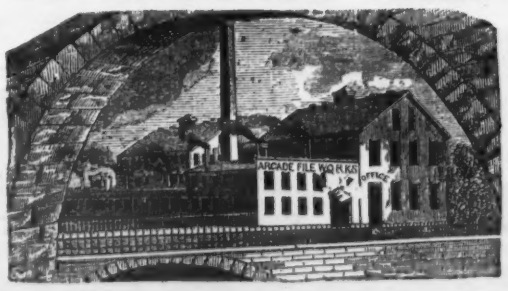
Strongest and Handsomest.

Most Saleable Wringer in the Market.

TRY A SAMPLE ORDER.

ESTABLISHED 1848.

C. T. DRAPER & CO.
Sing Sing, N. Y.
Manufacturers of SUPERIOR
HAND CUT



FILES and RASPS
Made from Best
ENGLISH CAST STEEL.
Quality guaranteed by written warranty when required.

BAEDER, ADAMSON & CO.,

Manufacturers of SAND & EMERY PAPER & EMERY CLOTH.

(Also in Rolls, for machine work.)

Ground Emery, Corundum & Flint, Glue & Curled Hair, Hair Felt, & Felting for Covering Boilers, Pipes, &c., Cow Hide Whips.

Stores: PHILADELPHIA, 730 Market St., | BOSTON, 143 Milk St.
NEW YORK, 67 Beekman St, | CHICAGO, 183 Lake St.

L. M. RUMSEY & CO.

MANUFACTURERS & JOBBERS OF

PUMPS & FIRE ENGINES,

LEAD PIPE & SHEET LEAD — GAS PIPE FITTINGS

RAILWAY SUPPLIES,

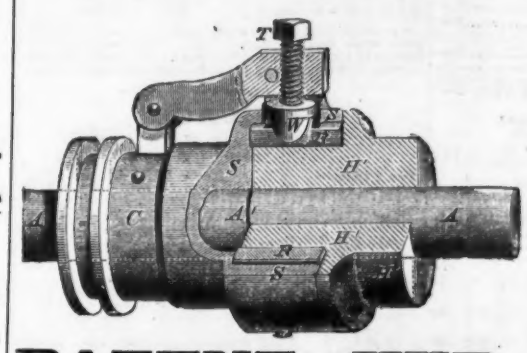
PLUMBERS & STEAM FITTERS BRASS GOODS — BELTING, HOSE, PACKING &c.

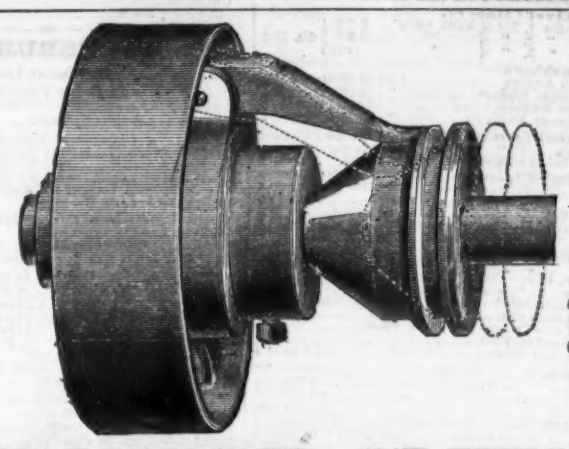
NO. 811 N. MAIN STREET,
ST. LOUIS, MO.

PATENT
Expanding, Self-Draining
RUBBER BUCKET.
Manufactured only by
L. M. RUMSEY & CO.

HUB FRICTION CLUTCH.

James Smith & Co., Mfg. Agents





PATENT HUB FRICTION CLUTCH.

Manufactured by the **HUB FRICTION CLUTCH CO., Limited, Philadelphia.**

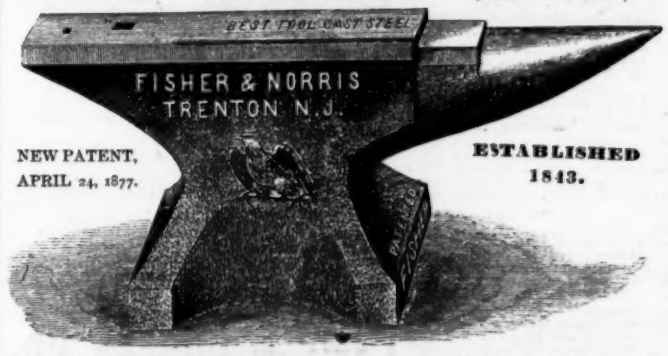
We claim for this device the following advantages for a perfect clutch, it having been adopted by several of the leading manufacturers of machinery and machinists' tools: It works easily but effectively. It works instantly and without noise. It is very durable, and is extremely simple and cheap, and has proven itself to be the best clutch in the market. Special arrangements can be made with leading manufacturers for the adoption of this clutch for their own tools. This clutch can and will be sold for less money than any other clutch in the market.

For sale by GEO. V. CRESSON, Philadelphia; MORTON, REED & Co., Baltimore.

JAMES SMITH & CO., Mfg. Agents, 137 Market Street, Philadelphia.

H. S. MANNING & CO., NEW YORK AGENTS, 111 Liberty Street.

THE "EAGLE." (PRICES REDUCED.)



NEW PATENT, APRIL 24, 1877.

ESTABLISHED 1843.

WARRANTED!!

Better than the best English Anvil.

Face in one piece, of BEST TOOL CAST STEEL. PERFECTLY WELDED, perfectly true; of hardest temper and never to come off or "settle." Horn of tough *untempered steel*, never to break or bend. It does not bounce the hammer back, and therefore can do more work with lighter hammer. *Only Anvil made in United States fully warranted as above. None genuine without our trade mark.*

New Price List, April 1, 1879.

ANVILS weighing 100 lbs. to 800 lbs., 9 cents per lb., with special discounts to the trade.

SMALLER ANVILS ("MINIMS").

No.	00	0	1	2	3	4	5	6	7	8	9
Weighing about	5	10	13	20	30	40	50	60	70	80	90 lbs.
	$2.25	2.75	3.25	4.00	4.50	5.25	6.00	6.50	7.25	8.00	

N. B.—These are the RETAIL PRICES. The only additional cost will be the freight to the purchaser's place of residence.

SOLD BY

New York—RUSSELL & ERWIN MANUFACTURING COMPANY, H. DURRIE & CO., TENNIS & WILSON.
Philadelphia—JAMES C. HAND & CO. Boston—GEORGE H GRAY & DANFORTH.
Baltimore—W. H. COLE & SONS, JOHN R. KELSO, Jr.
Louisville—W. B. BELKNAP & CO. Cincinnati—POST & CO. Cleveland—THE LAKE ERIE IRON CO.

MOHAWK & HUDSON MFG. CO., Waterford, N. Y. (four miles from Troy).

Eddy Valves.

FIRE HYDRANTS.

Yard Hydrants, Street Washers.

DODGE HAY PRESS.

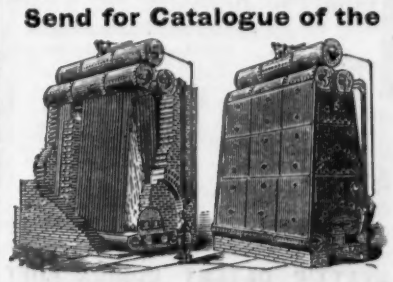
"DRAW-UP" PRESSES,
For Domestic use, Drugs, &c.

LARD & TALLOW PRESSES.
See *The Iron Age* of July 4, 1878.

Axe, Hatchet, Powder and Brush Machinery.

IRON AND BRASS CASTINGS.
Pulleys and Shafting.

Send for Catalogue of the



FIRMENICH

Safety Steam Boiler.

For Burning Smoke and all Gases from Coal and all kinds of Fuel.

J. C. & F. FIRMENICH,
Office, *13 Mortimer Street, Buffalo, N. Y.*

R. BLISS MFG. CO.,

Manufacturers of Hand and Bench Screws, Cabinet and Piano-Forte Makers' Clamps, Chisel Handles, Carpenters' Mallets, Croquet Games, Tournée, Boys' Tool Chests, Architectural Building Blocks Toys, &c.

Pawtucket, R. I.

THE PROVIDENCE TOOL COMPANY'S

Patent Anti-Friction Hoisting Block.

For hoisting Coal, Ore, Ice, or other heavy work, where Steam or Horse power is used. Made of Galvanized Iron and Steel, and not affected by exposure to weather.

Twenty-four feet hoist turns the friction wheels on the side around once.

The Block uses 3 inch to 4 inch rope, and will sustain with safety a load of 4 tons.

Will run either end up, or on its side. The lightest running and most durable Block yet produced.

Satisfaction guaranteed. Try one.

Send for Price List of Blocks.

HENRY B. NEWHALL 111 WARREN ST. N NEW YORK AGENT

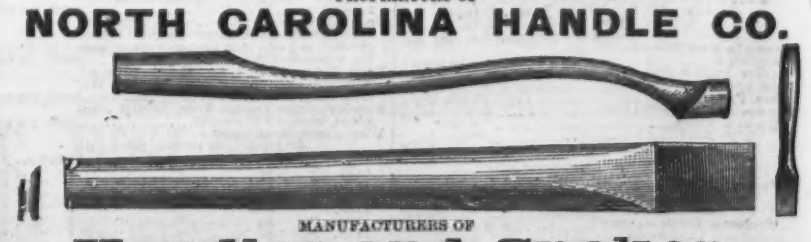
Providence Tool Co.,

PROVIDENCE, R. I.,

HUNDLEY & HANKS,

PROPRIETORS OF

NORTH CAROLINA HANDLE CO.



MANUFACTURERS OF

Handles and Spokes,

79 Reade Street and 97 Chambers Street, - - - NEW YORK,
HARDWARE COMMISSION MERCHANTS.

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American" ₱ ℔ 9c. dis 20 %
Apple Parers.—Reading ₱ doz $4.50
Lightning ₱ doz 6.50
Reading "78" ₱ doz 7.50
Aitken's Tools dis 40&10 %
Anvil & Vise.—
No. 1, $4.50; 2, 3.75; 3, 3.00 each dis 25 %
Augurs & Bitts.—Snell's Auger dis 50 %
L'Hommedieu's Ship Augers dis 15 %
Jenning's Bitts dis 10& 20 %
Cook's Bitts dis 50 %
Shepardson's Double-Cut Bitts dis 45 %
" " Gimlets dis 45 %
Stearn's Extension Hollow Augers per doz $36.00
Bonney's " " " per doz 33.00
Axes.—Blue Jackets per doz 8.00
Red Cross per doz 7.40
" Handled per doz 9.50
Dowse " Boys' dis 15 %
Ax Handles.—
Oak Extra, 31 in., No. A ₱ doz $2.20
" 34 in., No. A ₱ doz 2.50
" 31 in., No. B ₱ doz 1.75
" 34 in., No. B ₱ doz 2.00
" 31 or 34 in., No. C ₱ doz 1.25
Axle Clips dis 60 %
Balances.—Chatillon's dis 25&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers) per ft. 30
" Half-Round per ft, ⅝, 2½c; ¾, 4½c
Wrought " per ft, ⅝, 3½c; ⅞, 4c; 1, 5c
Bells.—Connel's Crank Gong dis 50&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1878 dis 25 %
Brass " " 1878 dis 25 %
Blind Fasts.—Lock Fasts ₱ C sets $4.00
No. 6 Fasts ₱ C sets 4.00
Veazie Fasts ₱ C sets 7.00
Shedd's ₱ C sets 8.00
Blind Hinges.—Mall. Hook, 3 holes ₱ C sets 5.00
Brad Awl Handles.—
Phœnix Adjustable ₱ doz $2.00
Bolts.—Norway Iron Carriage dis 70&10 %
Common " dis 75&10 %
Borax.—Refined ₱ ℔ 100
Boring Machines.—Snell Upright each, $3.25
Snell Angle each, 4.00
" Augers ₱ set 1.75
Braces.—Barber's dis 40& 5 %
Sporford's dis 50 %
Backus' dis 60 %
Bracket Saws.—Roger's each $2.25
Bracket Saws, extra quality, to No. 5 ₱ gro $0.85
Steel Frame, with patterns ₱ doz 7.50
Lester dis 25 %
"Holly," all iron each, $2.25
Brackets.
H. B. & M. Flower Pot dis 50&10 %
Bronzed Shelf, M. B. & D. list dis 20&10 %
Bread Kneader.—Stanyan dis 25 %
No. 4 capacity 3 loaves ₱ doz $24.00
No. 5 " 5 " ₱ doz 27.00
No. 6 " 8 " ₱ doz 33.00
Bronze Hardware.—Norwalk Lock Co. dis 50&10 %
Butts.—Union Fast Joint dis 50&10 %
" Loose " dis 75&5 %
" Japanned Acorn dis 75&5 %
" Silvered " dis 75&5 %
" Boston Finish dis 75&10 %
Centennial Spring dis 25 %
Carriage Jacks.—Climax ₱ doz $15.00
" large size ₱ doz 18.00
Cartridges.—U. S. Cartridge Co. dis 60 %
Cards.—Sargent Horse and Curry dis 33⅓&10 %
" Cotton dis 25&10 %
" Wool dis 25&10 %
Casters.—Bed and Table dis 50&10 %
Chain.—Traces 6½, 10, 4, straight ₱ pair 45c
" 6½, 10, 4, twisted ₱ pair 50c
" 7, 12, 2, " ₱ pair 75c
Coil 3-16 ₱ ℔ 10c
" ¼ ₱ ℔ 8c
" 5-16 ₱ ℔ 7c
" ⅜ ₱ ℔ 6c
" 7-16 ₱ ℔ 5¾c
" ½ ₱ ℔ 5¼c
Chalk.—White, Carpenter's ₱ gross 55c
Red, Carpenter's ₱ gross 75c
Blue, ₱ gross 90c
Chisels.—Hart, Bliven & Mead, Framing dis 70 %
Underhill, Framing dis 25 %
Buck's Shank, Framing dis 25 %
Clothes Line.—
Galvanized Wire, 100 feet each ₱ doz $4.50
Coal Hods.—Ironclad.—Galvanized dis 25 %
Japanned dis 30 %
Copper Rivets dis 25 %
Cocks.—Brass, L. F. & C. dis 50 %
Cordage.—Manila, usual trade dis ₱ ℔ 12c
Jute ₱ ℔ 9c
Cow Ties dis 45 %
No. 30, 3 ft. No. 6 Wire, with toggle ₱ doz $3.60
No. 34, 3 ft. " " with snap ₱ doz 3.80
No. 40, 3½ ft. " " with toggle ₱ doz 3.90
No. 45, 3½ ft. " " with snap ₱ doz 4.10
No. 50, 4 ft. No. 4 " with toggle ₱ doz 4.50
No. 55, 4 ft. " " with snap ₱ doz 4.75
No. 60, 4½ ft. " 3 " with toggle ₱ doz 5.38
No. 65, 4½ ft. " " with snap ₱ doz 5.62
Crow-Bars.—Cast Steel ₱ ℔ 8c
Iron, Steel Pointed ₱ ℔ 5c
Cutlery.—Pocket, American Shear Co.'s dis 33⅓&10
Butcher Knives, "Woods," Lap Bolster, Square Handle dis 33⅓& 5 %
Steak Knives dis 20 %
Lap Bolster, Oval Handle dis 25 %
Sticking dis 33⅓ %
Skinning dis 33⅓ %
Butcher, Common Round Handle, "Woods" dis 25%
Shoe Knives, "Woods" dis 10 %
Dividers.—Cook's dis 25 %
Dog Collars dis 20 %
Dog Muzzles.—Automatic dis 15 %
Door Springs.—Torrey's Rod ₱ doz $7.00
Gem Coil dis 10 %
Eccentric Steel Coil Spring, No. 1 ₱ doz $2.75
Door Stops.—"Thurston's" dis 50 %
Drawer Knobs.—"Thurston's" dis 50 %
Drills.—Morse Bitt Stock dis 25 %
Morse Straight Shank dis 20 %
Emery.—Wellington Mills ₱ ℔ 10c
Alden's ₱ ℔ 60
Enamelled Ware.
Standard Mfg. Co. Kettles dis 60 %
" Sauce Pans dis 35 %
Felloe Plates.—Wrought ₱ ℔ 8c
Files.—Madden & Cockayne dis 50 %
American File Co. dis 40 %
Nicholson " dis 35 %
Fluting Machines.
Knox, with 6 inch rolls ₱ doz $36.00
Geneva ₱ doz 13.50
Rochester ₱ doz 12.00
Forks.
W. C. & Co., Manure, reduced list dis 15&10 %
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, $1.00; 10-32, $1.10; 12-32, $1.20 ₱ doz gold.
Glass Cutters.
Combination Class Cutter and Knife Sharpener ₱ doz $1.25
Grub Hoes.—K. P. & Co.'s No. 2 ₱ doz 7.50
Hammers.—Maydole's dis 15 %
Hammond's dis 20 %
Dowse's Steel, A. E. ₱ doz $4.00
M. B. & D. dis 25 %
Hangers & Rollers.—Anti-Friction dis 60 %
Climax dis 50 %
Novelty dis 40 %
Common dis 50 %
Hand Screws dis 20 %
Hatchets.—Dis. 15 %
C. F. Dowse, Combination per doz. $10.00
Underhill dis 25 %
Hay Knives.—Lightning ₱ doz $18.00
Hinges.—Strap and T (new list) dis 60&10 %
Providence Plate ₱ ℔ 40
Wrought Screw Hook ₱ ℔ 40
Hoes.—W. C. & Co.'s (reduced list) dis 15&10 %
Hooks and Staples.—Brewers' dis 50 %
Horse Nails. No. 6 7 8 9
National Finished .23 .21 .20 .19 dis 15 %
Putnam Pointed .23 .21 .20 .19 net
Horse Nails.—Bridgewater
No. 6, 23; No. 7, 21; No. 8, 20; No. 9, 19.
Knobs.—"Norwalk"
Mineral ₱ doz $0.75
Porcelain, Japanned Mtg ₱ doz .85
" Por. Rose Nickel Mtg ₱ doz 2.40
" Plated " " ₱ doz 2.50
Silver Glass ₱ doz 5.00
" Bell Pulls ₱ doz 6.00
Lanterns.—Tubulars, No. 0 ₱ doz 10.00
Railroad, Oil, No. 43 ₱ doz 8.00
Guarded, Oil and Candle, No. 24 ₱ doz 3.50
Triangular ₱ doz 4.00
Hurricane dis 20 %
Lead.—Sheet ₱ ℔ 6½c
Pipe ₱ ℔ 8½c
Locks.—Norwalk Lock Co. (reduced list) dis 50&10 %
Eagle Cabinet dis 25 %
" Trunk dis 25 %
W. Wilcox & Co., Padlocks dis 33⅓&5 %
American Lock Co.'s Steel Key dis 33⅓ %
Metallic Sieves.—Mann's Patent dis 33⅓ %
Manure Forks.—W. C. & Co. (r'duc'd list) dis 15&10 %
Mattocks.—K. P. & Co., Long Cutter ₱ doz $9.50
K. P. & Co., Short Cutter ₱ doz 9.00
" Pick " ₱ doz 9.50
Measuring Tapes.—Eddy's dis 20 %
Meat Cutters.—Miles' Challenge dis 30 %
Hale's dis 50 %
American dis 25 %
Money Drawers.—Tucker's Alarm ₱ doz $27.00
Mouse Traps.—Delusion ₱ doz 2.00
Oilers.—Zinc and Tin dis 50 %
Brass and Copper dis 50 %
Ox Bows.—Extra finished and varnished dis 10 %
1⅝ in., ₱ doz. pair..$5.75 | 2 in., ₱ doz. pair....$9.00
1¾ in., " .. 8.00 | 2½ " " 11.00
Padlocks.—W. Wilcox & Co.'s dis 33⅓&5 %
Miller's Brass ₱ doz $9.00
Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔ ₱ doz 6.50
" 6 to 7 ℔ ₱ doz 7.00
Planes.—Auburn Tool Co. dis 35 %
N. Y. Tool Co. dis 50 %
English Iron dis 30 %
Bailey's dis 25&10 %
Plated Ware.—Rogers & Bro. dis 40&5 %
Pliers.—Vom Cleff & Co.'s Gold lis %
Button's Wire Pliers dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co. dis 60&10 %
Pocket Knives.
American Shear Co.'s dis 33⅓&10 %
Potato Diggers.
W. C. & Co. reduced list dis 15&10 %
Pulley Blocks dis 33⅓ %
Pumps.—Union Manufacturing Co.
Iron Cistern dis 15 %
" Pitcher Spout dis 5 %
Copper dis 25 %
Rivets.—Black dis 50 %
Carriage in 10 ℔ papers dis 40 %
Copper dis 25 %
Razor Strops.—Torrey's Full line
Rules.—Stanley Boxwood, dis 50&10 %
" Ivory, dis 50&10 %
Sadirons.—Common ₱ ℔ 2½c
Laundry ₱ ℔ 5c
Tailor's Geese ₱ ℔ 6c
Enterprise, "Potts" dis 33⅓ %
Mrs. Potts' Large Polishing, Nickeled ₱ doz net $9.50
Sash Locks.—King & Hutchinson's, new list dis 40 %
Hopkins & Dickinson's dis 40 %
Sandpaper.—Baeder & Adamson dis 15 %
M. B. & D. dis 20 %
Sash Weights.—Patent Eye ₱ ℔ 1½c
Saws.—Hand Saws, Disston's dis 20 %
Wheeler & Clemson dis 20&5 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1 ₱ foot 35c
" Champion " ₱ foot 35c
Disston's, Common " ₱ foot 44c
" Gt. American " ₱ foot 44c
Boynton's Lightning " ₱ foot 45c
Saw Setts.—Spring Lever ₱ doz $10.00
Saw Blades.—Disston dis 20 %
W. M. & C. dis 20&5 %
Welch & Grimith, Extra ₱ doz $9.60
" No. 2 ₱ doz 8.00
Scales.—Fairbanks dis 25 %
Howe dis 25 %
Screws.—Aiken's Flat-Head Iron dis 60 %
American Flat-Head Iron dis 60 %
" " Brass dis 45 %
" Round-Head " dis 30 %
" " Iron dis 45 %
Grilley " Nickel-plated Piano dis 55&5 %
" " Common dis 50 %
Shaves.—Kimball's ₱ inch 7½c
Watrous dis 15 %
Shears.—American Shear Co. dis 75 %
Shot.—Tatham's ₱ ℔ 6c
Shovels.—O. Ames dis 33⅓ %
O. Ames, other brands dis 37½ %
M. B. & D. dis 37½ %
Oxford, Birmingham Pattern dis 40 %
Snow Shovels.—Malleable tips ₱ doz $4.00
Slates.—Union dis 25 %
Acme dis 20 %
Spoons.—Tinned Iron dis 15 %
Britannia dis 50 %
Rogers' A No. 1 dis 40&5 %
Stock and Dies.—King's dis 10&5 %
Tacks.—A. Field & Son's dis 50&10 %
Pittsfield dis 50&10 %
Traps.—Oneida, Genuine dis 33⅓ %
Oneida, Imitation, H. & N. dis 50&10 %
Blake's dis 50&10 %
Tree Scrapers.—No. 1 ₱ doz. $1.00
No. 2 ₱ doz 3.00
No. 3 ₱ doz 4.00
Vises.—Solid Box, Blacksmith's ₱ ℔ 10½c
Simpson's Adjustable dis 20&10 %
Howard Vise Co. dis 33⅓ %
P. L. & Co., Solid Blacksmiths' new list dis 10 %
Weather Strips.
Browne's Flexible Rubber dis 30 %
In 20 feet boxes; No. 1, ⅝ in. wide, ₱ yard, 10c.; No. 2, ⅝ in., 15c.; No. 3, ¾ in., 20c.; No. 4, 1 in., 25c.
Valentine's Felt Moulding dis 30 %
Black Walnut Spring Weather Strips ₱ doz. $3.00
Window Awning.
Dearborns' per window; $1.00, dis 25
Window Springs.
Babcock's No. 3 ₱ gross $8.25
" " 4 ₱ gross 4.50
Wire Goods.—Gate Hooks and Eyes, &c. dis 70&10 %
Wrenches.—A. G. Coe's dis 60 %
Girard Mfg. Co. dis 60&10 %
Wringers.—Universal, No. 2 ₱ doz $63.00
Universal, No. 2½ ₱ doz 60.00
Novelty, No. 10 ₱ doz 60.00
" No. 2 ₱ doz 63.00
" No. 22 ₱ doz 67.00
Excelsior, No. A ₱ doz 78.00
" No. B ₱ doz 86.00
" No. CC ₱ doz 108.00
Novelty Set Tub, E ₱ doz 66.00
Eureka ₱ doz 54.00
Zinc ₱ ℔ 6c

Withington, Cooley & Co.—Hoes, Rakes, Forks, &c. dis 40 %. Special rate for Export.

St. Louis Metal Market.

(Corrected Weekly by Messrs. H. Sellers & Co.)

Tin Plate.

IC, 10x14, Best Char..	$ 7 25	DX, 13½x17, B. Char.	$ 9.2
IX, 10x14, " ..	9 25	DXX, 13½x17 " ..	11 25
IC, 12x 2, " ..	7 25	DXXX, 13½x17 " ..	13 25
IX, 12x12, " ..	9 25	DXXXX, 1.½x17, " ..	15 25
IC, 14x20, " ..	7 25	IC, 20x28, " ..	17 00
IX, 14x20, " ..	9 25	IX, 20x28, " ..	21.50
IXX, 14x20, " ..	11 25	IXX, 20x28, " ..	23 50
IXXX, 14x20, B. Char	14 25	IC, 14x20, Best Roof..	12 75
IXXXX, 14x20, " ..	15 25	IX, 14x.0, " ..	14 75
IC, 12x20, " ..	7 25	IC, 20x28, " ..	13 75
IX, 1?x 1, " ..	9 25	IX, 20x28, " ..	17 75
IC, 14x14 " ..	13 25	IC, 10x14, Best Coke..	6 00
IX, 14x14, " ..	15 25	IC 14x20, " ..	6 00
IXX, 14x14, " ..	14 25	IC, 10x20, " ..	9 75
DC, 12½x17, " .	7 25	Pr box 225 sh's Safe Tin	6 50

Sheet Iron.	Com'n.	Sm'th.	Sm'th.	Sm'th
No. 16 to 20	3 c	3 8c	5 5c	6 c
No. 22 to 24	3 5c	3 8c	5 8c	7 0c
No. 26	3 10c	3 9c	6 c	7 c
No. 27	3 20c	4 c	6 2c	7 4c

Genuine Russia Iron.

Perfect—No. 8, 10, 11, 12 ..... per lb. 13½c
No. 1 Stained—No. 8, 10, 12 ..... Per lb. 13 c
Tare 22 lbs. to Bdle. For less than Bdle. add 1c. ₱ lb.

Patent Planished Iron

No. 24 to 27, A quality ..... per lb 10½c
" " B " ..... " 9½c
For less than Bdle. add 1c. per lb.

Galvanized Sheet Iron.

Juniata, or 1st quality, Discount for full bundles ... 45 %

Block Tin.

Banca, Large Pigs	31c	do. Small	32c
Straits, Large Pigs	27c	Bar	29c
Eng. Ref'd. Large Pig	24c		

Solder.

Extra in Bars	12c	No. 2, in Bars	9½c
No. 1, in "	10c	Spelter Solder	11c

Pig Lead—Pigs 4c | in Bars 5c
Antimony 14c
Bismuth $1 50
Nickel 2 00
Crucibles.—Dixon's ₱ No. 4½c

Babbit Metal.

No. 1	₱ ℔. 16c	No. 3	₱ ℔ 11 c
" 2	" 14c	" 4	" " 7½c

Copper.

Braziers, 32x60, 14 to 100 lbs. Sheets	24c
" " 10, 11 & 12 lbs., "	26c
" " 8 and 9 lbs. "	28c
" " 6 and 7 lbs. "	30c
Tinned, 14x48, 14 and 16 oz.	25c
Planished, 14x48, 14 and 16 oz.	28c
" Boiler Sizes, 14 and 16 oz.	35c
Gutter Copper, 20 and 24x72, 10, 11 and 12 ℔., Sheets	27c
" 14 ℔. Sheets	24c
Reservoir Copper, 16x60 and 18x60	43c
Bar Copper, Square and Round, ⅜ to 1½ inch	24c
" " " ⅝ inch	27c
Copper Bottoms	28
Metallic Bottoms	16c
Soldering Coppers	26c

Brass.

Roll, No. 10 to 28, 12 in. in width	25c
" 30, 12 in. in width	26c
" 32, 16 "	29c
" 34, 16 "	33c
" 36, 16 "	31c
Platers, No. 40, 6	40c

Discount 10 per cent.

Brass and Copper Wire.

No.	Brass.	Copper.	No.	Brass.	Copper.
0 to 20	32c	34c	24	37c	40c
21	31c	41c	25	39c	42c
22	32c	41c	26	40c	50c
23	33c	43c	27	43c	53c

Brass Boring Wire, 2c. ₱ ℔ advance.
Discount 10 per cent.

Brass Tubing

Plain ⅛ to 3 inch 38c | 5-16 inch 38c
⅜ inch 38c | ½ " 46c
Copper Rivets and Burs dis 20 %
Brass Kettles 8 to 13 inches ₱ ℔ 55c.
" " all sizes over 13 inches 40c
Sheet Zinc.—600 lbs. cask 7c
250 lbs. cask 7½c
Sheet 7½c
Wire.—Iron, Bright Market dis 55 %
Iron, Coppered Market dis 10 %
Fence, Nos. 7, 8 and 9 ₱ ℔ $1 40
Trellis, Nos. 10 and 11 4¼c
" No. 14 5 c
Hay Baling, Charcoal, No. 20 and 11 5 c
" No. 13 5½c
Broom, Tinned, Nos. 18 to 22 10c
Fence Staples per keg 5 c
Per lb 5½c
Iron Rivets.—Black, papered dl 25 %
Tinned, papered dis 25 %

In bulk	new 5-16	⅜	5-16	⅜	in dis a.
	7½c	7½c	6½c	6½c	per lb.

Tacks.—New Harware List dis 50 %
Sad Irons ₱ ℔ 2½c
Enameled Kettles.—Standard Mfg. Co. dis 60 %
Enameled Sauce Pans. dis 40 & 10 %
Standard Mfg. Co. dis 40 %
Enameled Boilers.—Standard Mfg. Co. dis 40 & 10 %
Dripping Pans.—Smooth Iron ₱ ℔ 8 c
Geneva Platers per doz $12.00
Monroe Platers " 11.50
Stove Polish.—Dixon's ₱ F gross 6.00
Gem " 4.50
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Dixon's, in bulk ₱ ℔ 5c
Coffee Mills.—Parkers dis 40 %
Granite Iron Ware dis 5 %
Spoons.—Tea & Table dis 5 %
Basting dis 40 %
Retinned Iron Ware dis 25 & 5%
Plain Stamped Ware dis 25
Japanned Ware.—St. Louis List dis 45 %
Fry Pans dis 40

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IRELAND ST.
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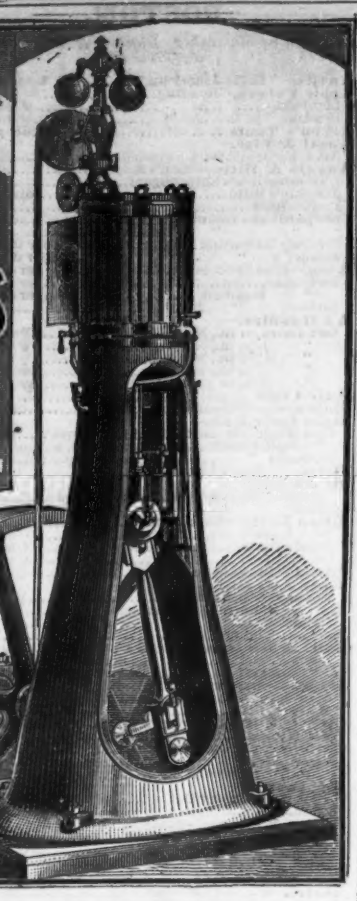

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Of New and Heavy Designs, from 2 to 100 H. P.,
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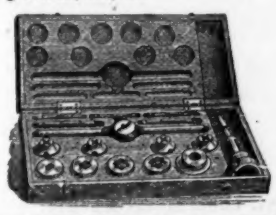
Bolt Cutters, hand or power; Screw Plates, Drilling Machines, Tire Benders, Tire Upsetters, Taps and Dies for pipe and for use in the bit brace, Tire Measuring wheels, &c., &c.



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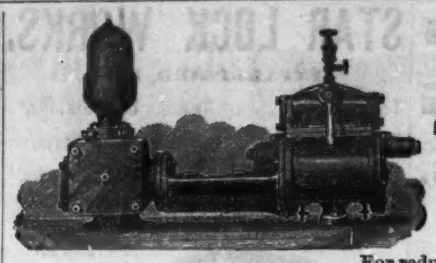

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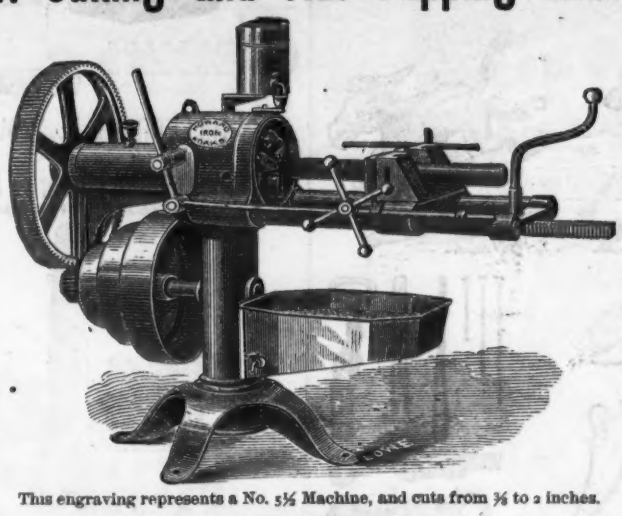

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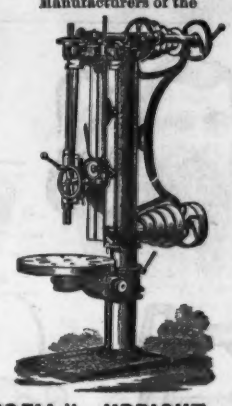

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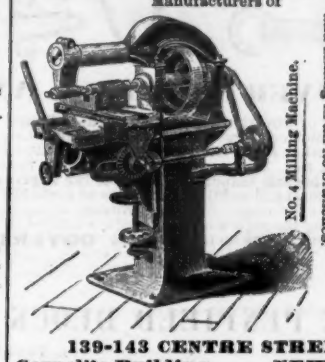

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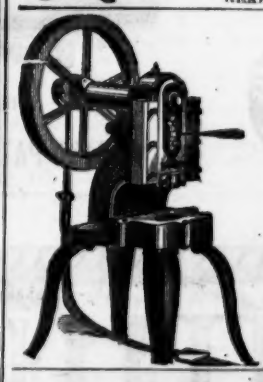

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2¼	32.00	37.00	3.25	9.00
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3½	54.00	62.00	4.50	17.00
4	64.00	73.00	5.00	21.00
4½	74.00	84.00	5.50	25.00
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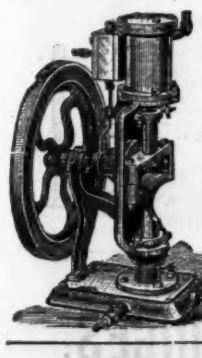

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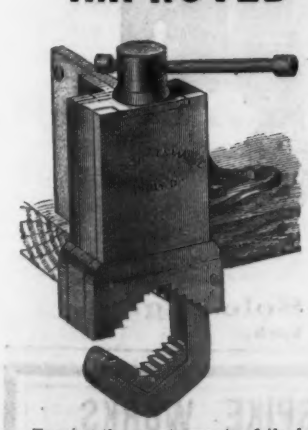

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EFFICIENT,

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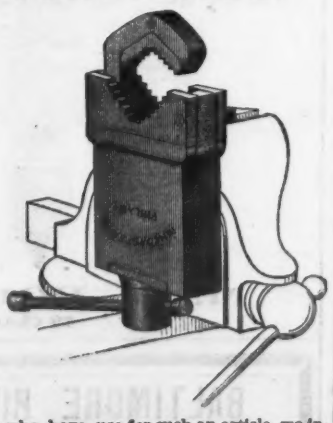

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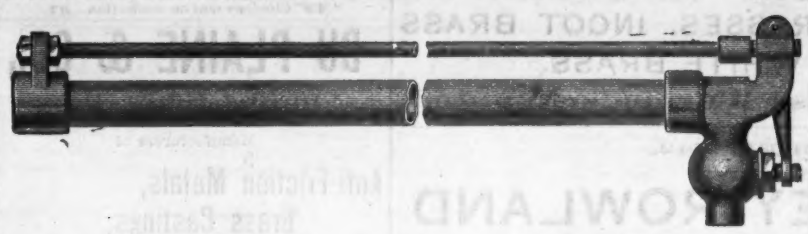

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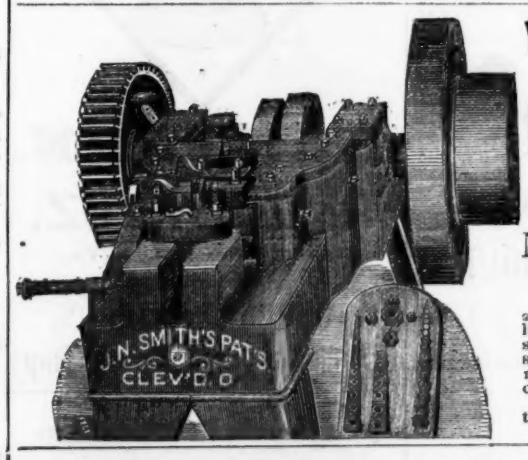

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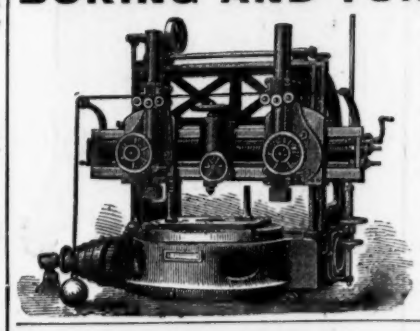

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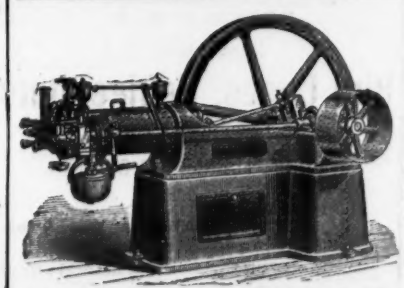

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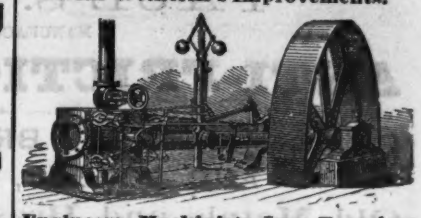

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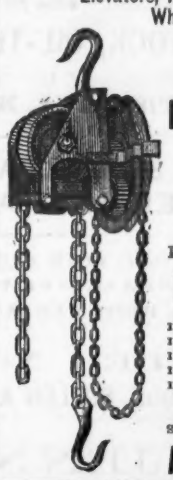

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8 ft.	1,000 lbs.	$25.00	$1.20
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9 "	4,000 "	60.00	2.00
10 "	6,000 "	75.00	2.20
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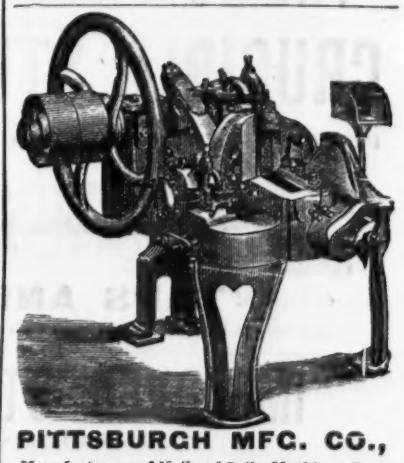

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8 ft.	500 lb.	$22 50	$1 00
8	1,000	25 00	1 20
8	2,000	30 00	1 50
8	3,000	40 00	1 75
9	4,000	60 00	2 00
10	6,000	75 00	2 10
10	8,000	95 00	2 40
12	12,000	150 00	3 75
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